MVA Series Air Handling Unit
Installation, Operation and Maintenance Manual



MVA Series units are direct drive vertical and multi-position Air Handlers delivering nominal cooling capacities of 1.5 to 5 tons. Units may be specified with hot water or electric heating coils to meet space cooling loads or heating loads or both. Three return air configurations are available for maximum flexibility.

How to Use this Manual:

This manual gives instructions regarding installation, operation and maintenance for the MVA Series air handling units.

Use these instructions in conjunction with other appropriate instructions, including but not limited to those instructions supplied with the outdoor unit. Installation must comply with all applicable local codes.

GENERAL
Installation and maintenance are to be performed **only** by qualified personnel who are familiar with local codes and regulations and are experienced with HVAC equipment of this type.

WARNING: Sharp edges, coil surfaces and rotating fans are a potential injury hazard – avoid contact.

WARNING: Hazardous voltage – Disconnect and Lock Out all incoming power sources before servicing or installing unit. ELECTRIC SHOCK CAN CAUSE DEATH.

WARNING: This equipment may be installed well above finished floor—Use extreme caution when working at heights.

SAFETY WARNING:
Installer should pay particular attention to the following words:
NOTE–intended to clarify or make installation easier.
CAUTION–given to prevent equipment damage.
WARNING–to alert installer that personal injury and/or equipment damage may result if installation procedure is not properly followed.

UNPACKING-CHECK FOR DAMAGE!

Immediately inspect each unit for damage upon receipt.

- Inspect units for external and concealed damage immediately.
- File any damage claims in accordance with the Freight Damage Policy and Terms and Conditions.
- Do not repair damaged units without written authorization.
- Protect stored units from damage.

THIS PAGE INTENTIONALLY LEFT BLANK

MVA Series Air Handling Unit
Installation, Operation and Maintenance Manual

Installation, Start-Up and Service Instructions

THIS PAGE INTENTIONALLY LEFT BLANK

DANGER

NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running.

LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag. Electric shock can cause personal injury or death.

LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters.

Failure to follow these warnings could lead to personal injury or death.

WARNING

CHECK the assembly and component weights to be sure that the rigging equipment can handle them safely.

Note also, the centers of gravity and any specific rigging instructions.

CHECK for adequate ventilation so that fumes will not migrate through ductwork to occupied spaces when welding or cutting inside air-handling unit cabinet or plenum.

WHEN STEAM CLEANING COILS be sure that the area is clear of personnel.

DO NOT attempt to handle access covers and removable panels on outdoor units when winds are strong or gusting until you have sufficient help to control them. Make sure panels are properly secured while repairs are being made to a unit.

DO NOT remove access panel fasteners or open access doors until fan is completely stopped. Pressure developed by a moving fan can cause excessive force against the panel which can injure personnel.

DO NOT work on dampers until their operators are disconnected.

BE SURE that fans are properly grounded before working on them.

Failure to follow these warnings could result in personal injury or equipment damage.

PRODUCT NOMENCLATURE

Unit Type/Size		Description
Code	Selection	
01, 02	MV	Direct Drive Multiposition air handling unit

Generation/Series		Description
Code	Selection	
03	A	Revision Level

Unit Type/Size		Description
Code	Selection	NOM Capacity
04, 05	18	18,000 Btu/hr
	24	24,000 Btu/hr
	30	30,000 Btu/hr
	36	36,000 Btu/hr
	42	42,000 Btu/hr
	48	48,000 Btu/hr
	60	60,000 Btu/hr

Primary Coil Type		Description
Code	Selection	
06	F	4 ROW DX with electronic expansion valve, R-410a

Heating Coil		Description
Code	Selection	
07	B	Electric Heat Ready (field installed kit - EH Top will be provided)*
	C	3.0 kW - single phase w/circuit breaker only * 1 stage (all sizes)
	D	5.0 kW - single phase w/circuit breaker only * 1 stage (all sizes)
	E	6.0 kW - single phase w/circuit breaker only * 1 stage (all sizes)
	F	8.0 kW - single phase w/circuit breaker only * 1 stage (all sizes)
	G	9.5 kW - single phase w/circuit breaker only * 1 stage (all sizes)
	H	14.5 kW - single phase w/circuit breaker only * 1 stage (size 30 to 60)
	I	19.5 kW - single phase w/circuit breaker only * 1 stage (size 42, 48, 60)

Notes: *

1. Electric Heat KW rated at 230V. For 208V operation, derate heater to 75% of 230V rating.
2. Electric Heat complete with circuit breaker style power switch.
3. 14.5 and 19.5 kW shall have two supply circuits.

Future Use		Description
Code	Selection	
08	A	Future Use

Unit Grade		Description
Code	Selection	
09	S	Standard

Unit Voltage		Description
Code	Selection	
10	6	208/230/1/60 ECM-VE (customer change transformer tap for 208V)

Controls		Description
Code	Selection	
11	H	Panasonic control board & low voltage interface

Return Air Cabinet Options			
Ordering Number		Description	
Code	Selection	Unit Orientation	Return Location
12	B	Vertical (Front RH Cond Drain Cnx) or Horizontal Right	Bottom Return
	R	Vertical (Front LH Cond Drain Cnx)	Right Return
	L	Vertical (Front RH Cond Drain Cnx)	Left Return
	T	Horizontal Left or Vertical (Front LH Condensate Drain Cnx)	Bottom Return
Note: Right return, horizontal orientation, or left hand condensate drain connections require "Universal" drainpan selection. See code 13.			

Drain Pan		Description
Code	Selection	drain pan and cabinet insulation type
13	C	Fiberglass, Universal Drainpan - Galvanized
	D	Fiberglass, Universal Drainpan - Stainless Steel
	G	Foil Face Fiberglass, Universal Drainpan - Galvanized
	H	Foil Face Fiberglass, Universal Drainpan - Stainless Steel

Tracking		Description
Code	Selection	
14	P	Panasonic

Pre-installation

1. Check items received against packing list.
2. Do not stack unit components or accessories during storage. Stacking can cause damage or deformation.
3. If unit is to be stored for more than 2 weeks prior to installation, observe the following precautions:
   a. Choose a dry storage site that is reasonably level and sturdy to prevent undue stress or permanent damage to the unit structure or components. Do not store unit on vibrating surface. Damage to stationary bearings can occur. Set unit off ground if in heavy rain area.
   b. Remove all fasteners and other small parts from jobsite to minimize theft. Tag and store parts in a safe place until needed.
   c. Cover entire unit with a tarp or plastic coverall. Extend cover under unit if stored on ground. Secure cover with adequate tie-downs or store indoors. Be sure all coil connections have protective shipping caps.
   d. Monthly — Remove tarp from unit, enter fan section through access door or through fan inlet, and rotate fan and motor slowly by hand to redistribute the bearing grease and to prevent bearing corrosion.

Rigging — Do not remove shipping skids or protective covering until unit is ready for final placement. Use slings and spreader bars as applicable to lift unit. *Do not lift unit by coil connections or headers.*

Do not remove protective caps from coil piping connections until ready to connect piping.

Unpackaging

1. Remove all packaging and any foreign material from unit.
2. Check blower wheel for free rotation.
3. Check copper lines, coil etc. for internal or hidden damage.

Return Air and Unit Orientation

Units may be positioned in several configurations depending on the return air configuration selected—see Figure 1.

NOTE: Right and left return units are not recommended for horizontal installation.

Service Clearance

The fan coil is completely serviceable from the front. Units are approved for 0" (zero inches) of clearance. This allows substantial freedom in the positioning of the unit to best serve the requirements of the structure.

WARNING-AUXILIARY DRAIN PAN RECOMMMENDED:

This product has an auxiliary condensate drain which should be piped to a condensate overflow sensor or safe drain location or both to protect the equipment and property from damage in the case of condensate overflow.

In addition, the International Mechanical Code (IMC) section 307.2.3 requires the use of auxiliary drain pans. Many municipalities have adopted this code.

This practice represents the standard for professional installation whether or not this code has been adopted in a specific municipality or territory. As such, water damages that would have been prevented had an auxiliary pan been deployed will not be considered for compensation. This position is taken regardless of whether the source of the moisture was specified as a potential failure mode in the applicable building code or not. A freeze burst, cracked drain pan, failed weld, or corrosion induced leak are some of the potential failure modes that are mitigated when an auxiliary pan is properly installed. Professional installers recognize the value of protecting customer assets against foreseeable events. Customers who choose to avoid the cost of common protective measures waive their right to seek damages when those foreseeable events occur. If the product is located above a living space or where damage may result from condensate overflow, install a watertight pan of corrosion-resistant metal beneath the unit to catch over-flow which may result from clogged drains or from other reasons. Provide proper drain piping for this auxiliary pan. Consult local codes for additional precautions before installation.

Unit Support

Floor mounting: Unit may be mounted on a housekeeping pad, floor, platform or plenum. Provide a suitable isolation pad to minimize sound transmission to the structure. **CAUTION! Make sure to allow enough elevation to permit construction of the condensate trap. Also allow enough elevation and clearance for opening the filter door (removes to the front).** See Service Clearances.

NOTE:
Electronic Expansion Valve (EEV) must be oriented vertically, and is shipped for vertical cabinet orientation.

For horizontal cabinet orientation, follow procedure to rotate the EEV assembly. **Refer to Figure 2.**

WARNING

FOR HORIZONTAL CABINET ORIENTATION, EEV MUST BE ROTATED TO VERTICAL POSITION! Failure to reorient the EEV can result in improper unit operation or equipment damage or dangerous condition.

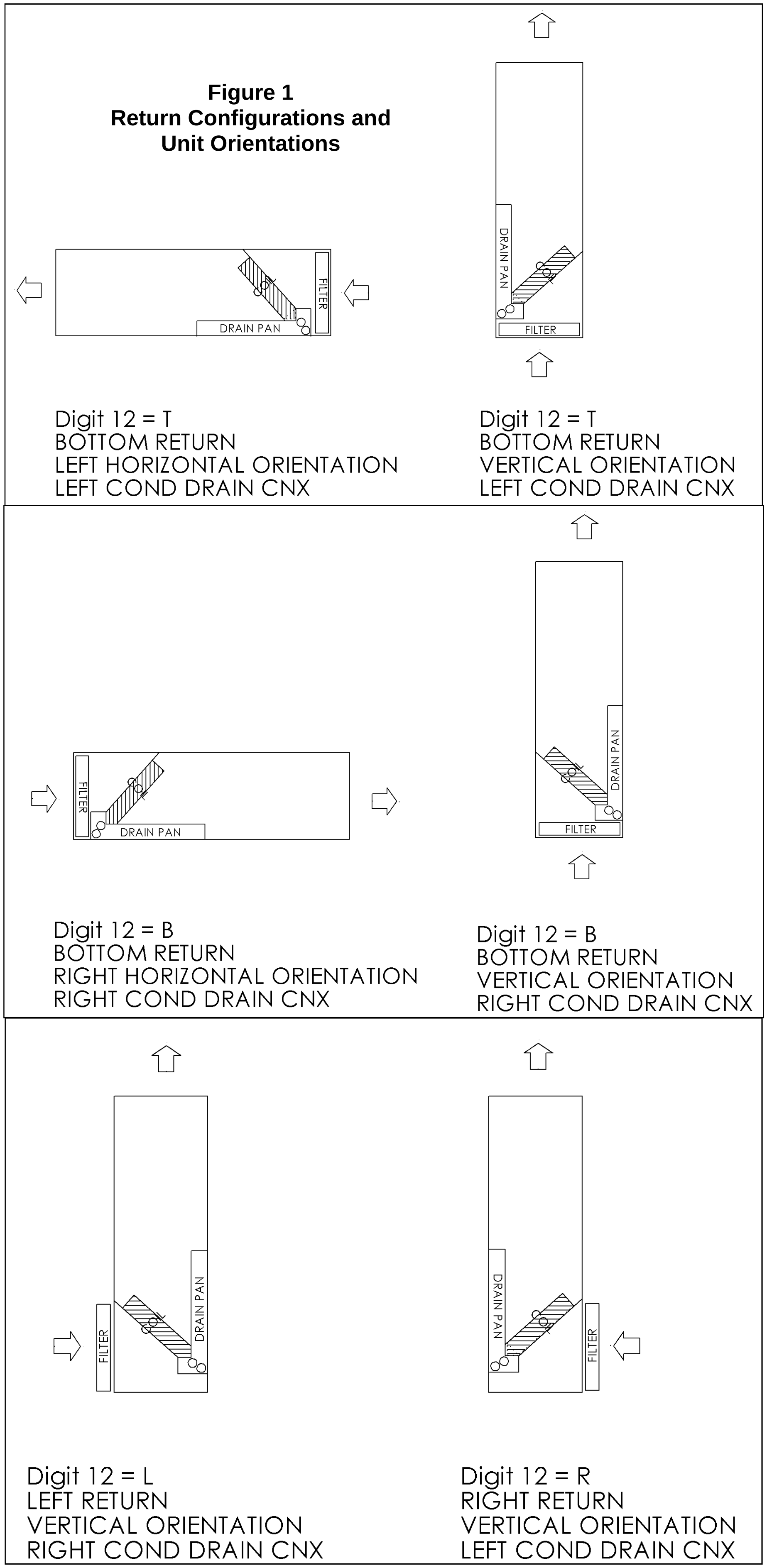


Figure 1
Return Configurations and Unit Orientations

INSTALLATION—VERTICAL TO HORIZONTAL CONVERSION—EEV ROTATION

WARNING
FOR HORIZONTAL CABINET ORIENTATION, EEV MUST BE ROTATED TO VERTICAL POSITION! Failure to reorient the EEV in VERTICAL position can result in improper unit operation or equipment damage or dangerous condition.

Figure 2a-Vertical Orientation

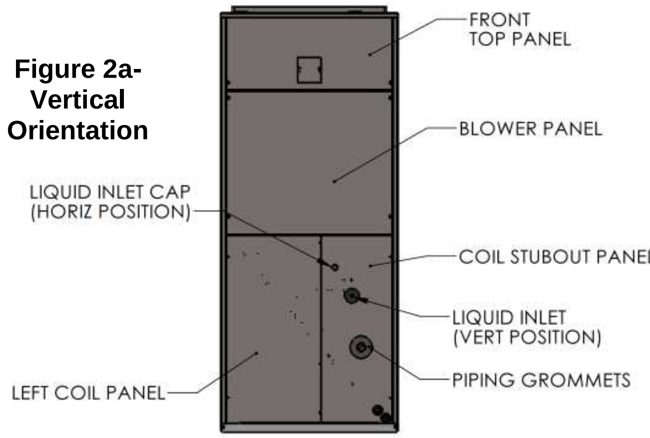
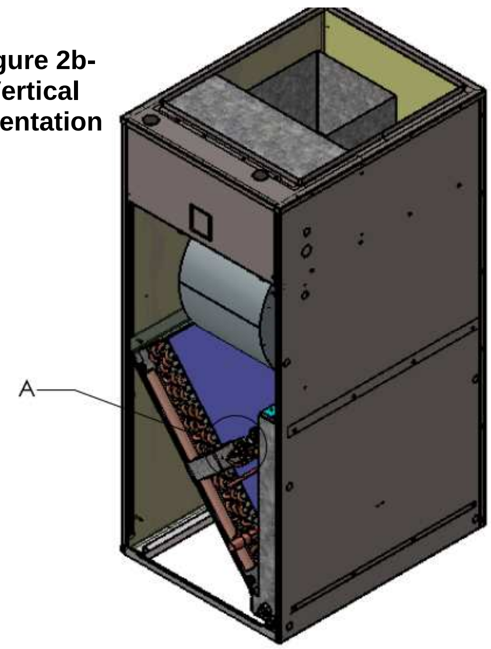


Figure 2b-Vertical Orientation



CONVERSION PROCEDURE:

1. UNIT IS SHIPPED WITH NITROGEN CHARGE. IF UNIT HAS ALREADY BEEN CHARGED WITH REFRIGERANT, REMOVE REFRIGERANT CHARGE PER LOCAL CODES BEFORE PERFORMING CONVERSION PROCEDURE.
2. REMOVE PIPING PLUGS AND SAVE FOR LATER USE. NITROGEN WILL DISCHARGE FROM COIL.
3. REMOVE PIPING GROMMETS; REMOVE LIQUID INLET CAP FOR HORIZONTAL POSITION.
4. REMOVE BLOWER PANEL, LEFT AND RIGHT COIL PANELS
5. SECURE EEV BRACKET WITH WRENCH AND TURN COUPLING FLANGE NUT COUNTER CLOCKWISE WITH 3/4" WRENCH TO LOOSEN AND DISCONNECT COUPLING. THE COUPLING TAIL NUT SHOULD BE ALLOWED TO TURN FREELY.
6. REPOSITION EXPANSION VALVE ASSEMBLY AS SHOWN IN FIGURE 2d. ENSURE EXPANSION VALVE IS VERTICAL WITHIN +/- 15 DEG WITH UNIT INSTALLED IN HORIZONTAL POSITION
7. REATTACH COUPLING AND TIGHTEN TO 10-12 FT LBS WHILE SECURING EEV BRACKET WITH WRENCH.
8. AS AN ALTERNATIVE TO STEP 5 COUPLING MAY BE TIGHTENED UNTIL NO THREADS ARE SHOWING AND COUPLING IS BOTTOMED OUT. THEN TURN AN ADDITIONAL 60 DEG (OR ONE HEX FLAT) TO TIGHTEN.
9. REINSTALL FRONT PANELS, GROMMETS, AND PIPING PLUGS.

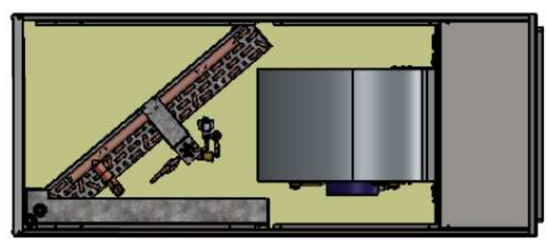


Figure 2d-Horizontal Orientation

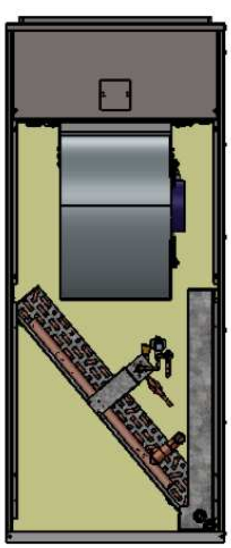
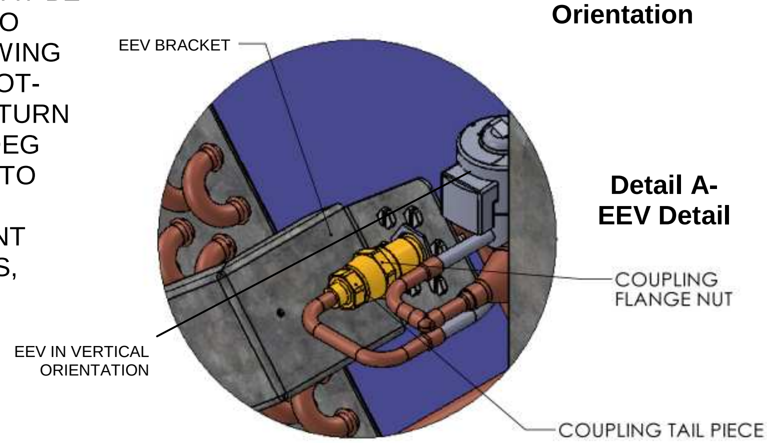


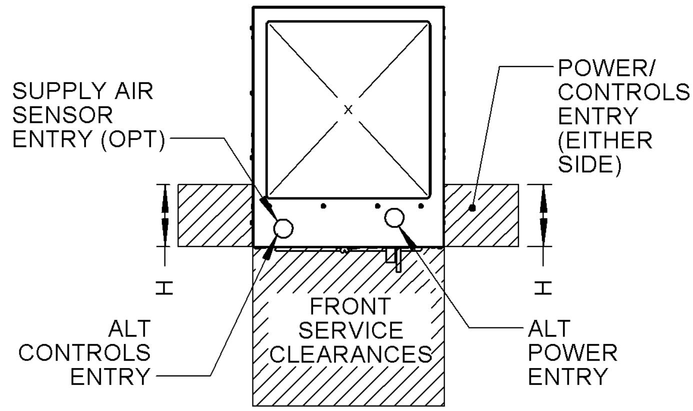
Figure 2c-Vertical Orientation, Panels Removed



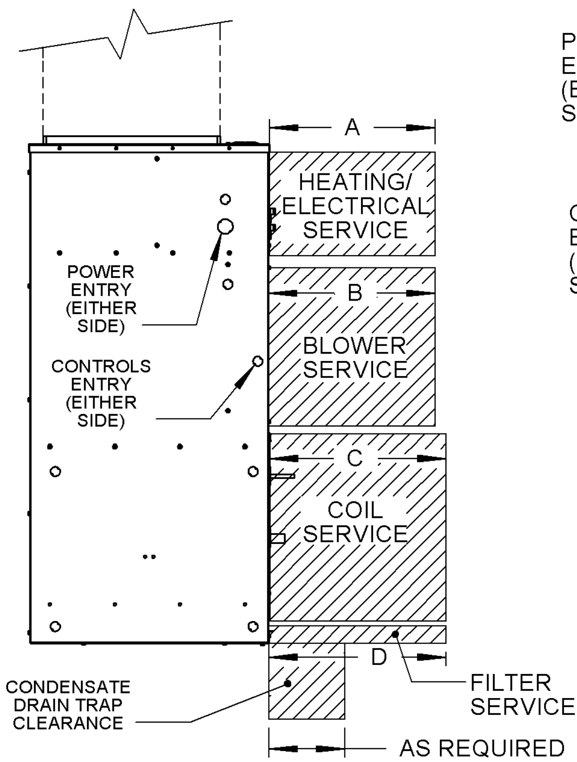
Detail A-EEV Detail

INSTALLATION—SERVICE CLEARANCES

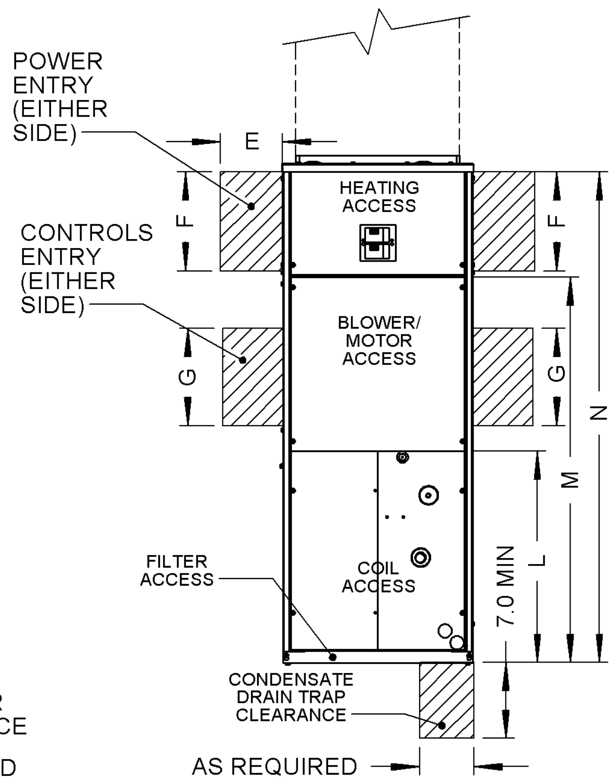
UNIT SIZE	CLEARANCE DIMENSION (INCHES)					
	A	B	C	D	E	F
18/24	36.0	36.0	36.0	22.0	6.0	9.0
30/36	36.0	36.0	36.0	25.0	6.0	10.0
42/48	36.0	36.0	36.0	27.0	6.0	11.0
60	36.0	36.0	36.0	31.0	6.0	11.0
	G	H	L	M	N	
18/24	12.0	7.0	19.4	35.7	45.0	
30/36	12.0	7.0	23.5	40.6	50.0	
42/48	12.0	7.0	26.3	43.6	54.0	
60	12.0	7.0	28.3	46.4	56.0	



TOP VIEW



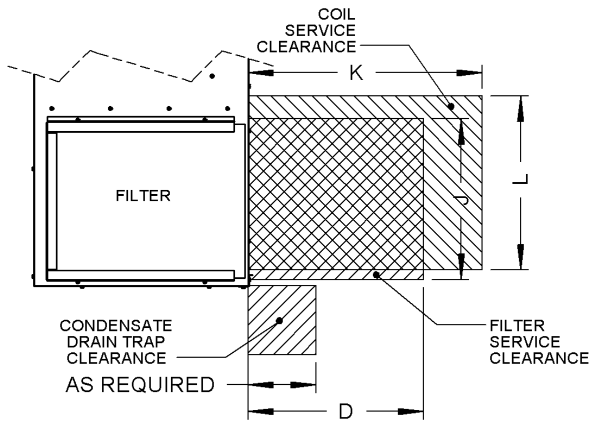
LEFT VIEW



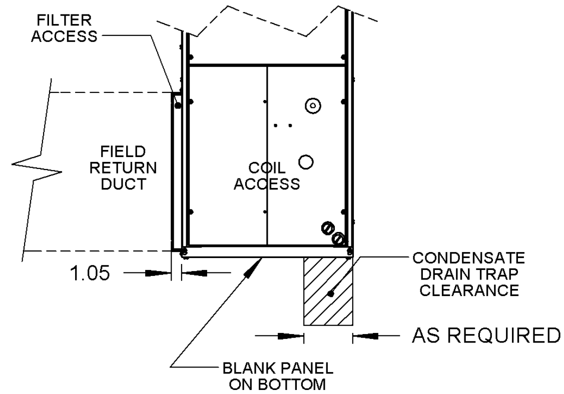
FRONT VIEW

NOTES:
1. BLOWER SERVICE REQUIRES FRONT ACCESS ONLY.
2. RECOMMENDED BUT NOT NECESSARY: ALLOW 12" ON RIGHT AND LEFT SIDES FOR SIGNIFICANT BUT IN-FREQUENT SERVICE PROCEDURES SUCH AS DRAIN PAN OR COIL REPLACEMENT.
3. WHEN UNIT IS INSTALLED HORIZONTALLY (LYING ON LEFT OR RIGHT SIDES - REFER TO RETURN ORIEN-TATIONS), CLEARANCES REMAIN THE SAME AS INDICATED ABOVE, EXCEPT TRAP CLEARANCE EXTENDS BELOW THE UNIT.

INSTALLATION—SERVICE CLEARANCES-
SIDE RETURN FILTER DETAILS

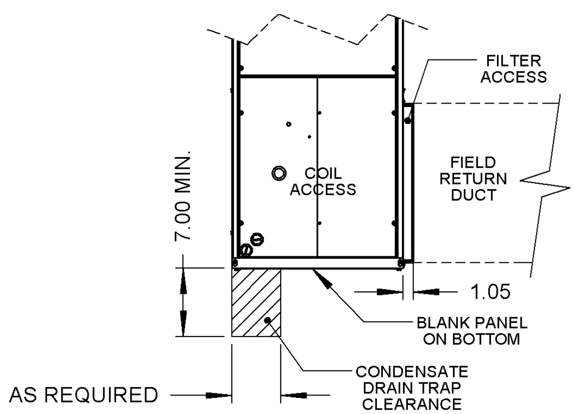


LEFT VIEW
(LEFT RETURN UNIT)

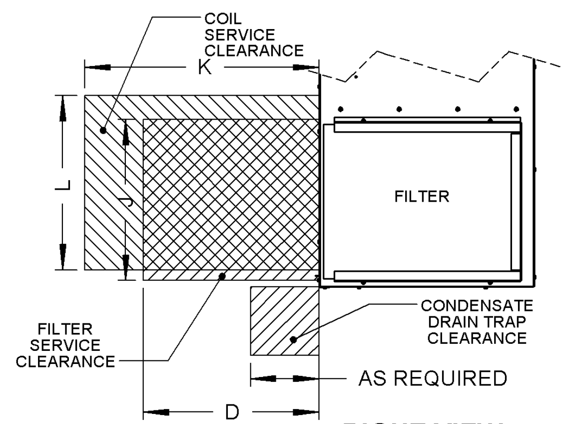


FRONT VIEW
(LEFT RETURN UNIT)

LEFT RETURN UNIT-
FILTER ACCESS DETAILS



FRONT VIEW
(RIGHT RETURN UNIT)



RIGHT VIEW
(RIGHT RETURN UNIT)

RIGHT RETURN UNIT-
FILTER ACCESS DETAILS

UNIT SIZE	CLEARANCE DIMENSION (INCHES)			
	D	J	K	L
18/24	22.0	17.5	36.0	19.4
30/36	25.0	20.0	36.0	23.5
42/48	27.0	22.0	36.0	26.3
60	31.0	24.0	36.0	28.3

NOTES:
1. THIS PAGE SHOWS CLEARANCES SPECIFIC TO SIDE RETURN UNITS. REFER TO UNIT SERVICE CLEARANCES SHEET FOR OTHER REQUIRED CLEARANCES.
2. FIELD RETURN DUCT IS NOT REQUIRED.

INSTALLATION

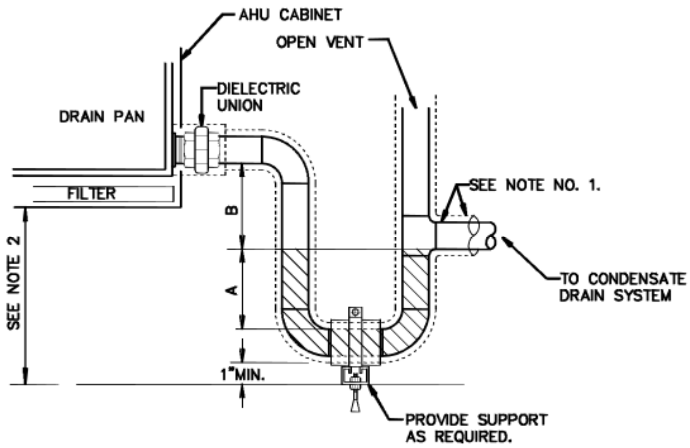
Install the unit so that it is level or pitches slightly –(1/8 inch) – toward the condensate drain connection.

Anchor the unit to the plenum or platform through the bottom flange using 2ea #10 sheet metal screws on each side (4 screws total).

Ceiling Suspension: Mount the unit in ceiling-suspended horizontal orientation per suspension details (Figure 4). Unit is NOT intended to be wall mounted. Consult a qualified structural engineer for special mounting considerations.

WARNING
INSURE THAT THE UNIT IS ADEQUATELY SUPPORTED FROM STRUCTURE TO PREVENT DAMAGE OR INJURY CAUSED BY FALLING EQUIPMENT! If uncertain about how to connect to the structure, consult a qualified structural engineer.

Install the unit so that it pitches slightly –(1/8 inch) – toward the condensate drain connection.



CONDENSATE DRAIN DETAIL

NOT TO SCALE

MAINTAIN THESE DIMENSIONS FOR ADEQUATE TRAP SEAL:
A = 3.5" MINIMUM
B = 2.0" MINIMUM

NOTES:

1. CONDENSATE DRAIN PIPING RECOMMENDATIONS:
   A. MINIMUM 3/4" Φ PIPE SIZE
   B. COPPER OR PVC PIPE MATERIAL
   C. USE DIELECTRIC UNION FOR DISSIMILAR METALS.
   D. INSULATE PER PROJECT SPECIFICATIONS.
2. PAD OR PLENUM HEIGHT AS REQUIRED TO INSTALL TRAP AND CONDENSATE DRAIN PIPING.
3. AVOID BLOCKING FILTER SERVICE ACCESS WHEN INSTALLING CONDENSATE DRAIN PIPING.

Fig. 3 — Condensate Drain

Condensate Drain

Install a trapped condensate drain line at unit drain connection. All MVA units have 3/4 in. FPT condensate main and auxiliary drain connections. Provide adequate trap clearance (trap depth) beneath the unit as indicated in Fig. 3. Provide freeze-up protection as required to insure reliable condensate drainage. Freeze protection measures are customer-supplied and installed.

Pipe to condensate drain using PVC or copper or other suitable material. Pitch drain piping downward at a minimum slope of 1/8 inch per foot.

Pipe auxiliary drain to "tell tale" drain location or floor drain to clearly indicate when condensate drain service is required. Alternately, use a field-provided condensate overflow detection device in the auxiliary drain connection to provide alarm or other controls action when the drain pan fills to the level of the auxiliary drain.

Placing Unit In Ductwork

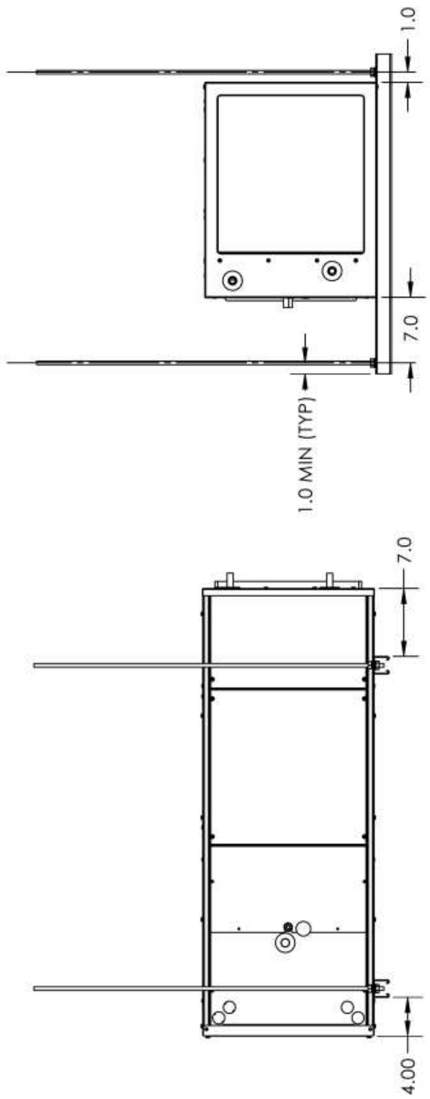
1. Utilize flexible transitions on supply and return connections to reduce noise and vibration transmission to the structure.

2. When the connecting return air duct is smaller than the coil inlet opening, construct the transition piece so that the vertical and horizontal dimensions of the transition piece do not increase more then one inch for every seven inches of length of the transition piece.

2. Provide at least three feet of straight duct work preceding the unit inlet.

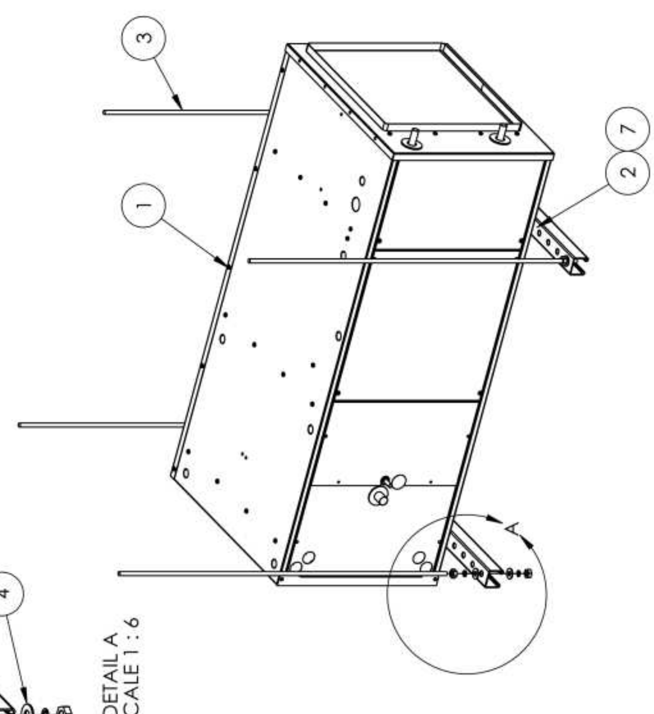
Duct Insulation and Vapor Proofing:
Properly select and install duct insulation as required by the application.
All externally insulated duct work must have an adequate vapor seal for summer operation. This is particularly important where the duct is exposed to highly humid conditions in such places as attics, vented crawl spaces, unconditioned basements, and utility rooms. The vapor seal prevents condensation of moisture in the insulating material and subsequent loss of its insulating value.

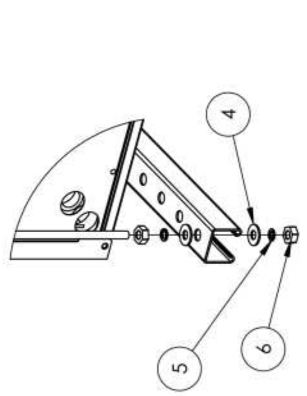
Figure 4
CEILING SUSPENSION DETAILS



ITEM NO.	DESCRIPTION	QTY.
1	MVA AIR HANDLER	1
2	UNISTRUT, 1-5/8 X 1-5/8, 16 GA MIN, 9/16" DIA HOLES OR EQUIV	2
3	ALL THREAD 3/8" NOM, ASTM A307-GR A OR EQUIV	4
4	FLAT WASHER USS, 3/8" NOM, ANSI B18.22.1	8
5	LOCK WASHER, 3/8" NOM, ANSI B18.21.1	8
6	HEX NUT, 3/8"-16 UNC, ASTM A563-GR A OR EQUIV	8
7	GASKET TAPE, RUBBER OR EQUIV	2

NOTES:
1. INSTALLATION MATERIALS ARE FIELD SUPPLIED AND INSTALLED.
2. ENSURE BUILDING STRUCTURE IS ADEQUATE FOR SUPPORTING UNIT.
3. CUT UNISTRUT TO REQUIRED LENGTH TO MAINTAIN DIMENSIONS SHOWN. LENGTH WILL DEPEND ON UNIT SIZE.
4. INSTALL RUBBER GASKET TAPE BETWEEN UNIT AND UNISTRUT SUPPORTS BEFORE INSTALLING UNIT. LENGTH OF GASKET TAPE WILL DEPEND ON UNIT SIZE.
5. SECURE UNISTRUT USING HARDWARE SHOWN. USE HEX NUTS TO ADJUST HEIGHT AND ENSURE UNIT IS INSTALLED LEVEL.
6. TORQUE HEX NUTS TO 20 FT LBS.





DETAIL A
SCALE 1 : 6

CAUTION
Direct-expansion coils are shipped pressurized with dry nitrogen. Release pressure from the coil through valves in protective caps before removing caps. Do not leave piping open to the atmosphere unnecessarily. Water and water vapor are detrimental to the refrigerant system. Until the piping is complete, recap the system and charge with nitrogen at the end of each workday. Clean all piping connections before soldering joints. Failure to follow these procedures could result in personal injury or equipment damage.

Refrigerant Piping

Refrigerant Coils: Direct-expansion coils have liquid and suction line connections through the front of the cabinet. **CAUTION**: Use proper care when brazing including use of heat sink (wet cloth or other method) to prevent damage to liquid line and suction line components.

Size and install refrigerant lines in accordance with the condensing unit manufacturer's instructions. Provide insulation on the suction line, to prevent condensation. Provide insulation on the liquid line if unit to be used for heat pump service or if otherwise required.

Electric Heater Accessory

The electric heater may be factory-installed or field-installed. See Figures 5 through 8.

Removal Procedure:

To remove the electric heater,

1. Disconnect and lock out electrical power from the unit. Remove heater access panel. Disconnect power wires from the power switch—DANGER! - MAKE SURE there is no voltage on these wires before disconnecting!
2. Disconnect 2 harness connectors at the blower deck.
3. Remove 2 screws holding heater support feet to the blower deck.
4. Remove 4 screws that mount the heater to the heater bulkhead. Handle heater carefully to avoid damaging the wire heating elements. Remove heater from the unit.

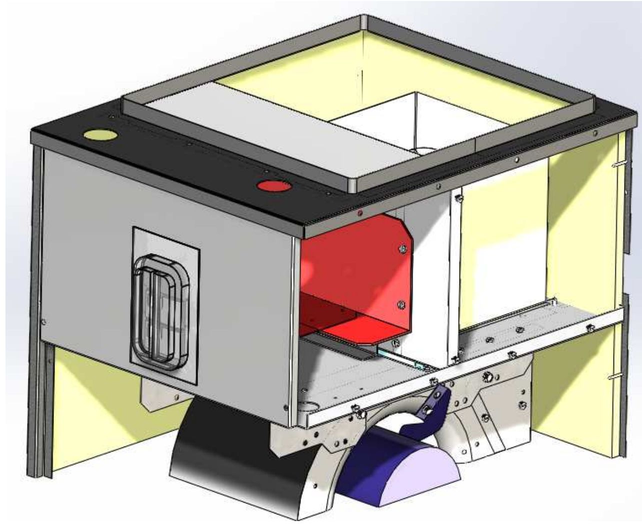


Fig. 5 — Heater Accessory Installed (right side panel not shown)

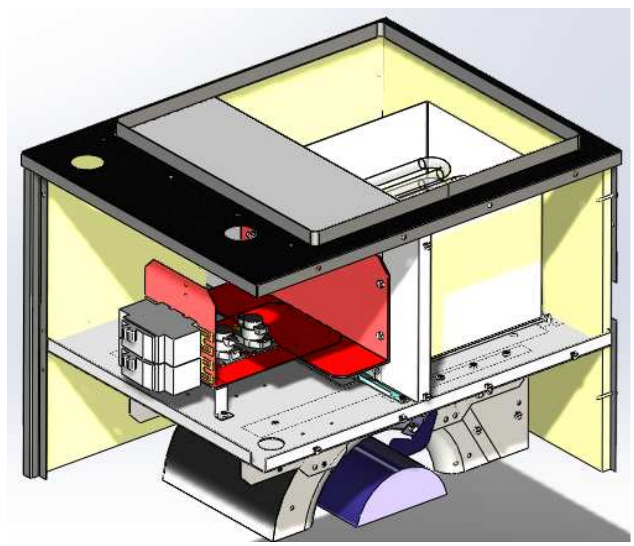


Fig. 6 — Heater Accessory Installed (right side and heater access panels not shown)

DANGER
WARNING: Hazardous voltage. Only qualified personnel must install the electrical service. Disconnect and Lock Out all incoming power sources before connecting to electrical service. **WARNING:** This appliance must be permanently grounded in accordance with the National Electrical Code and local code requirements. **WARNING**: For use with copper conductors only.

INSTALLATION

Install Procedure:

To install the electric heater,

1. Disconnect and lock out electrical power from the unit. Remove heater access panel. Disconnect field power wires from the unit power wires. **DANGER! - MAKE SURE there is no voltage supply to the unit before proceeding!**
2. Disconnect and discard 1 harness connector at the blower deck.
3. Remove blank plate from heater access panel (covers square hole for breaker style power switches).
4. Remove SAT sensor and sensor holder from heater bulkhead and reposition on unit discharge ductwork routing through auxiliary SAT sensor hole on top panel.
5. Install SAT 3 feet after the first 90 degree turn in the discharge ductwork.
6. Remove plate on the heater bulkhead (4 screws).
7. Install heater by carefully supporting the heater and inserting it into the opening in the heater bulkhead. NOTE: Make sure to guide the pin into the hole at the back of the heater shroud. Secure the heater to the bulkhead with 4 screws.
8. Connect 2 wiring harnesses (male) to the matching female receptacles in the blower deck.

DANGER

WARNING: Hazardous voltage. Only qualified personnel must install the electrical service. Disconnect and Lock Out all incoming power sources before connecting to electrical service.

9. Connect field wiring to the breaker-style power switches on the front of the heater. **WARNING! Be sure to provide the appropriate wire size and branch circuit protection as required by the unit nameplate!**
10. Install the heater access panel.
11. Install the silicone cover "boot" over the top of the power switches. This protects them from dust buildup. The switches may be activated through the flexible boot material.
12. Mark the nameplate label with the matching heater kW rating. Label is located on the exterior of the front top panel.
13. Update EEPROM settings to values shown in the table. Refer to test run manual for detailed instructions for changing the EEPROM settings.

Item Code	New Settings
07	0001
38	0002
3C	-001

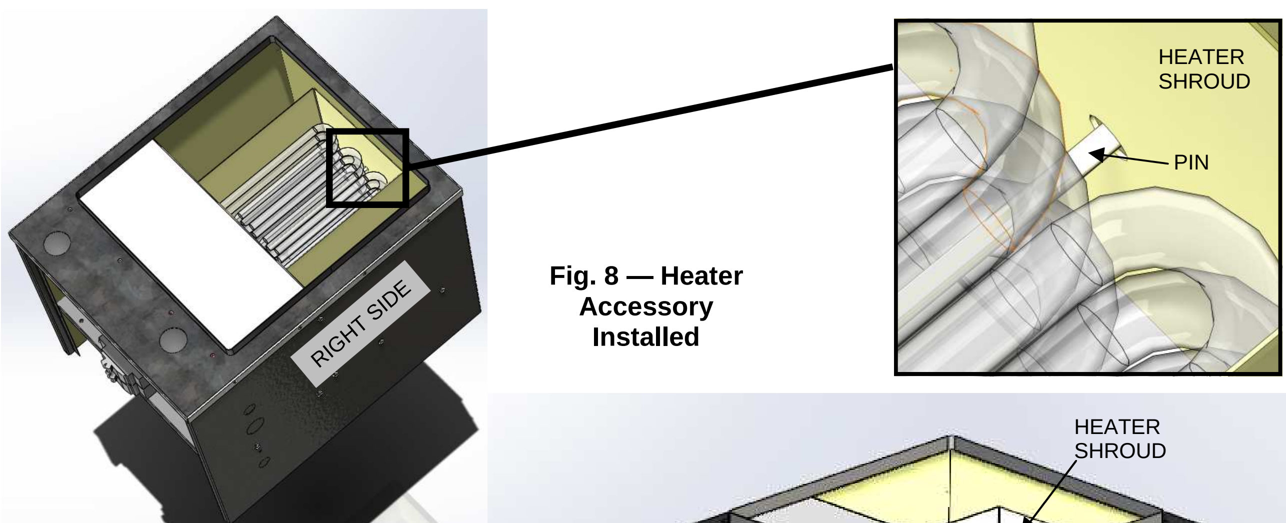


Fig. 8 — Heater Accessory Installed

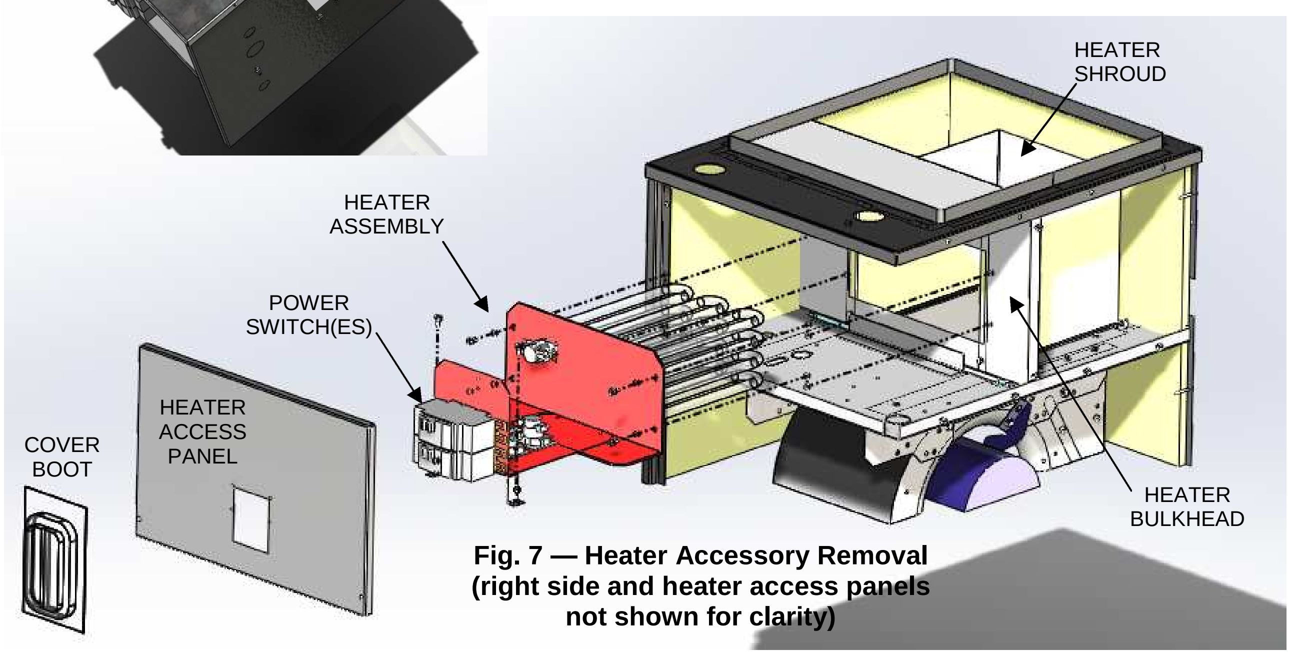


Fig. 7 — Heater Accessory Removal (right side and heater access panels not shown for clarity)

INSTALLATION-ELECTRICAL

DANGER

WARNING: Hazardous voltage. Only qualified personnel must install the electrical service. Disconnect and Lock Out all incoming power sources before connecting to electrical service.

WARNING: This appliance must be permanently grounded in accordance with the National Electrical Code and local code requirements.

WARNING: For use with copper conductors only.

Typical wiring diagrams are shown on the following pages FOR REFERENCE. Always refer to the wiring diagram on the air handling unit for actual wiring.

NOTE: CHECK MOTOR RATING PLATE FOR CORRECT LINE VOLTAGE.

Connect electrical service to unit. Refer to unit wiring diagram**.**

Power Wiring

For power supply connection, route field power wiring L1 and L2 and connect either:

1. Unit Without EH: to field-provided and installed disconnect switch and from switch to power entry (unit side) and to unit power leads inside the unit electrical section; or
2. Unit With EH: into the unit through power entry (unit side) and then to the factory installed power switch inside the electrical section (see Figure 9). Note: power switch looks like a circuit breaker but **does not provide overload protection**. Power switch provided only with electric heater (field kit or factory installed). NOTE: When electric heat greater than 10kW is provided, two power supply circuits are required, as shown on the wiring diagram.

Refer to nameplate or Electrical Ratings (page 30) for FLA, maximum overcurrent protection device (MOPD) and minimum circuit ampacity (MCA). Also refer to wiring diagram affixed to unit to make control and power wiring connections. For new heater installation, mark the nameplate label with the matching heater kW rating. Label is located on the exterior of the front top panel.

NOTE: Installer is responsible for power wiring and branch circuit over current protection.

Control Voltage Wiring

Control voltage wiring may enter the unit at the control box located behind the blower access door, or other convenient location. Control voltage wiring leads exit the bottom of the control box and are ready for field-connection.

CAUTION! To prevent malfunction of the air conditioner caused by electrical noise, route control wiring and inter-unit control wiring SEPARATELY FROM THE POWER WIRING!

DANGER

NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running.
LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag. Electric shock can cause personal injury or death.
LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters.
Failure to follow these warnings could lead to personal injury or death.

CAUTION

Use only copper conductors for field-installed electrical wiring. Unit terminals are not designed to accept other types of conductors.

Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.

Make wiring connections in accordance with the system wiring system diagram and these instructions. Wrong wiring may cause improper operation or unit damage!

Unauthorized changes in the internal wiring can be very dangerous. The manufacturer will accept no responsibility for any damage or malfunction that occurs as a result of such unauthorized changes.

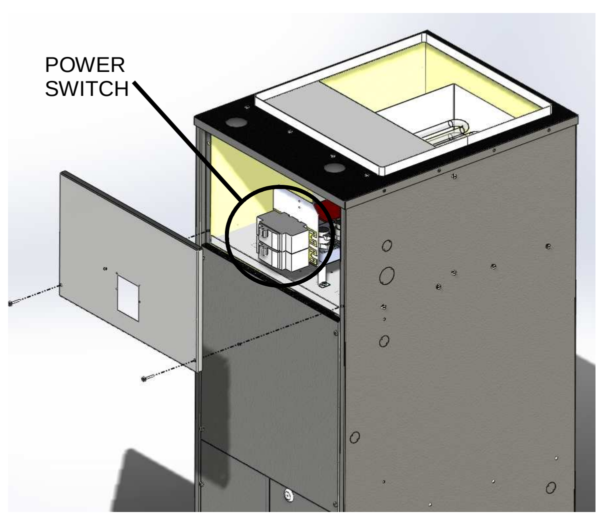


Figure 9
Unit with Electric Heat

INSTALLATION-ELECTRICAL

General

Provide strain relief where field wiring passes through cabinet. Wiring within the cabinet has been positively located and supported so that it does not pass over sharp metal edges or come in contact with moving parts. After servicing, position wiring properly in the original supports.

All field-installed wiring, including the electrical ground, MUST comply with the National Electrical Code (NEC) as well as applicable local codes. In addition, all field wiring must conform to the Class II temperature limitations described in the NEC.

Refer to factory wiring diagrams installed in the unit. Use the MCA and MOPD from the nameplate or electric heat nameplate or Electrical Ratings (page 30) to size power supply wiring and overcurrent protection device. Installation must comply with NEC and local codes.

For communicating controls, refer to Figures 10 through 13 for max lengths, sizing and interconnections. Refer to the condensing unit operation manual for more details.

DANGER

WARNING: Hazardous voltage. Only qualified personnel must install the electrical service. Disconnect and Lock Out all incoming power sources before connecting to electrical service.

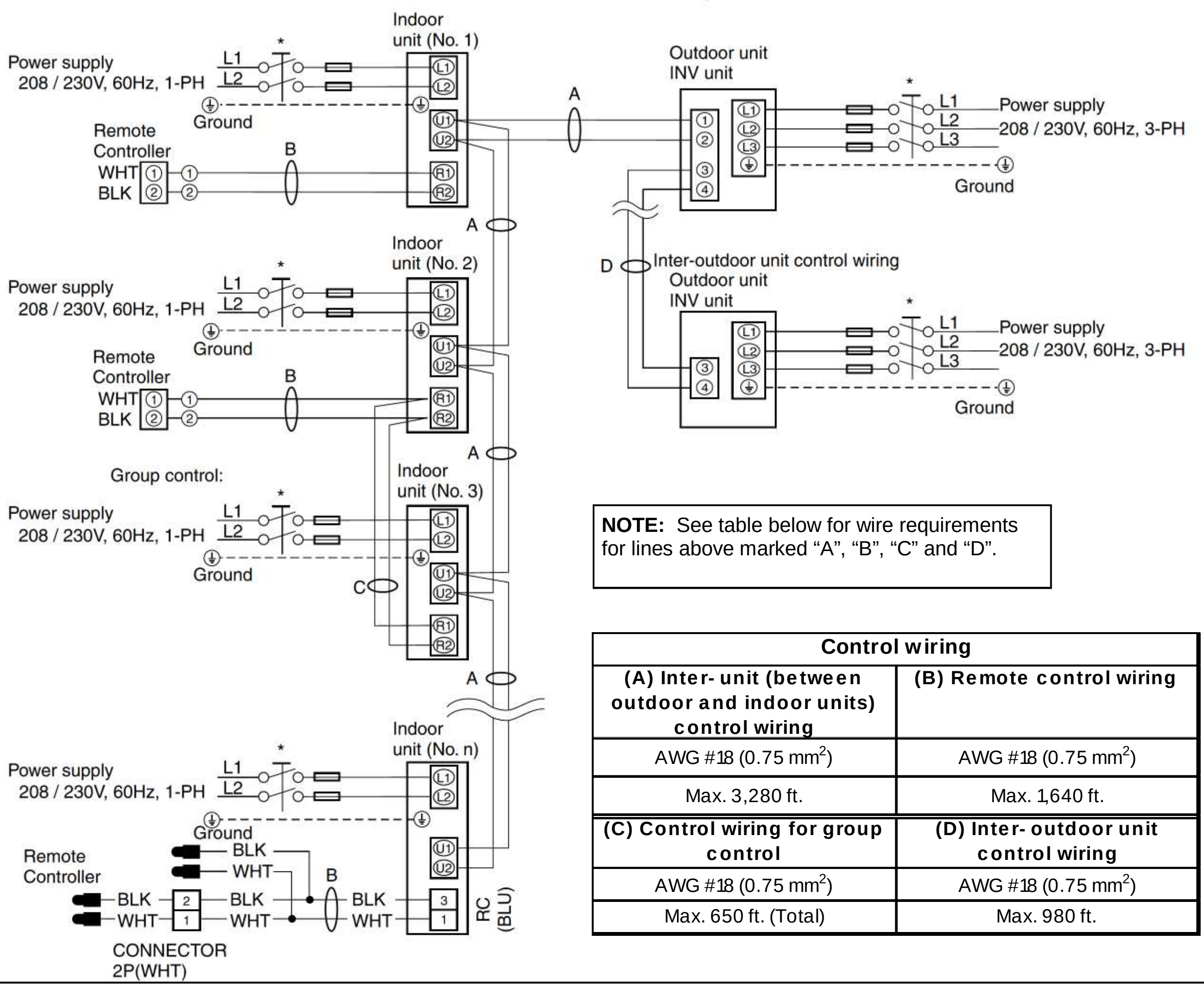
WARNING: This appliance must be permanently grounded in accordance with the National Electrical Code and local code requirements.

WARNING: For use with copper conductors only.

CAUTION

Loose wiring may cause the terminal to overheat or result in unit malfunction or cause a fire hazard. Insure that all wiring is tightly connected!

Figure 10
Building System Wiring Diagram
(multiple indoor & outdoor units)



NOTE: See table below for wire requirements for lines above marked “A”, “B”, “C” and “D”.

Control wiring	
(A) Inter-unit (between outdoor and indoor units) control wiring	**(B) Remote control wiring**
AWG #18 (0.75 mm^2)	AWG #18 (0.75 mm^2)
Max. 3,280 ft.	Max. 1,640 ft.
(C) Control wiring for group control	**(D) Inter-outdoor unit control wiring**
AWG #18 (0.75 mm^2)	AWG #18 (0.75 mm^2)
Max. 650 ft. (Total)	Max. 980 ft.

Figure 11
Inter-Unit Control Wiring

Do not install the inter-unit control wiring in a way that forms a loop.

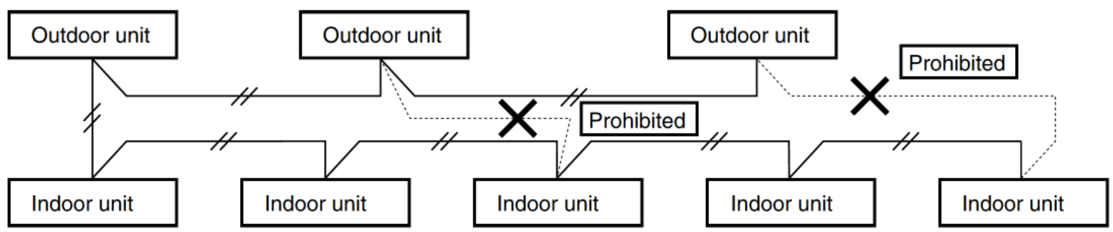
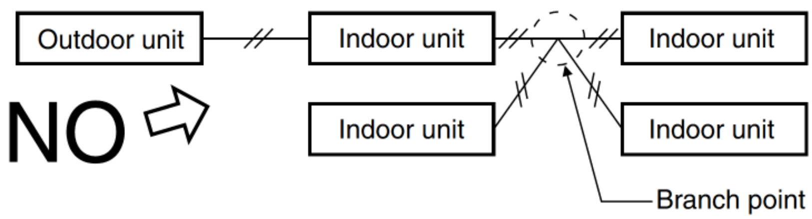


Figure 12
Inter-Unit Control Wiring

Do not install inter-unit control wiring with splices or “star branch” pattern. Star branch wiring causes misaddress setting errors.



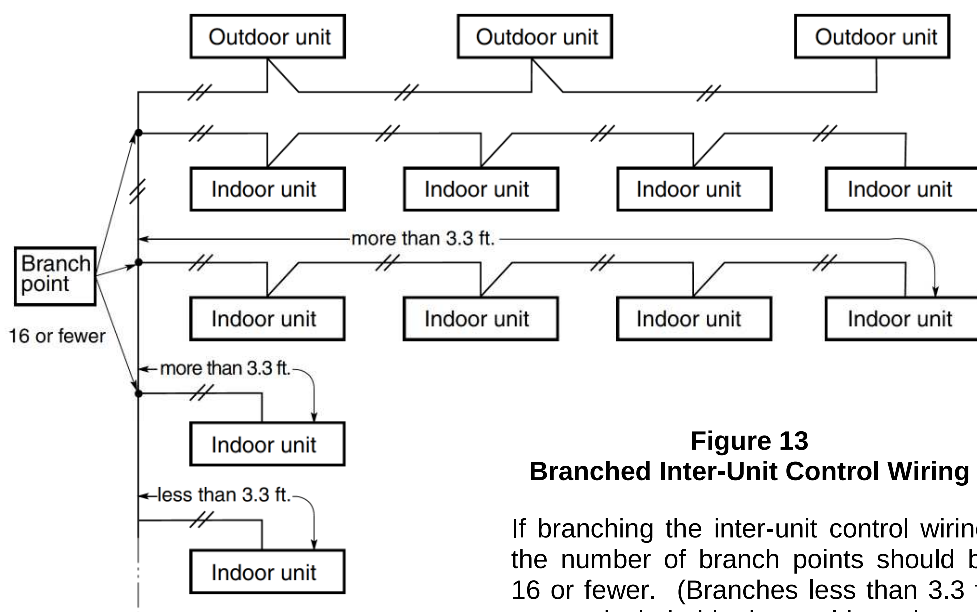
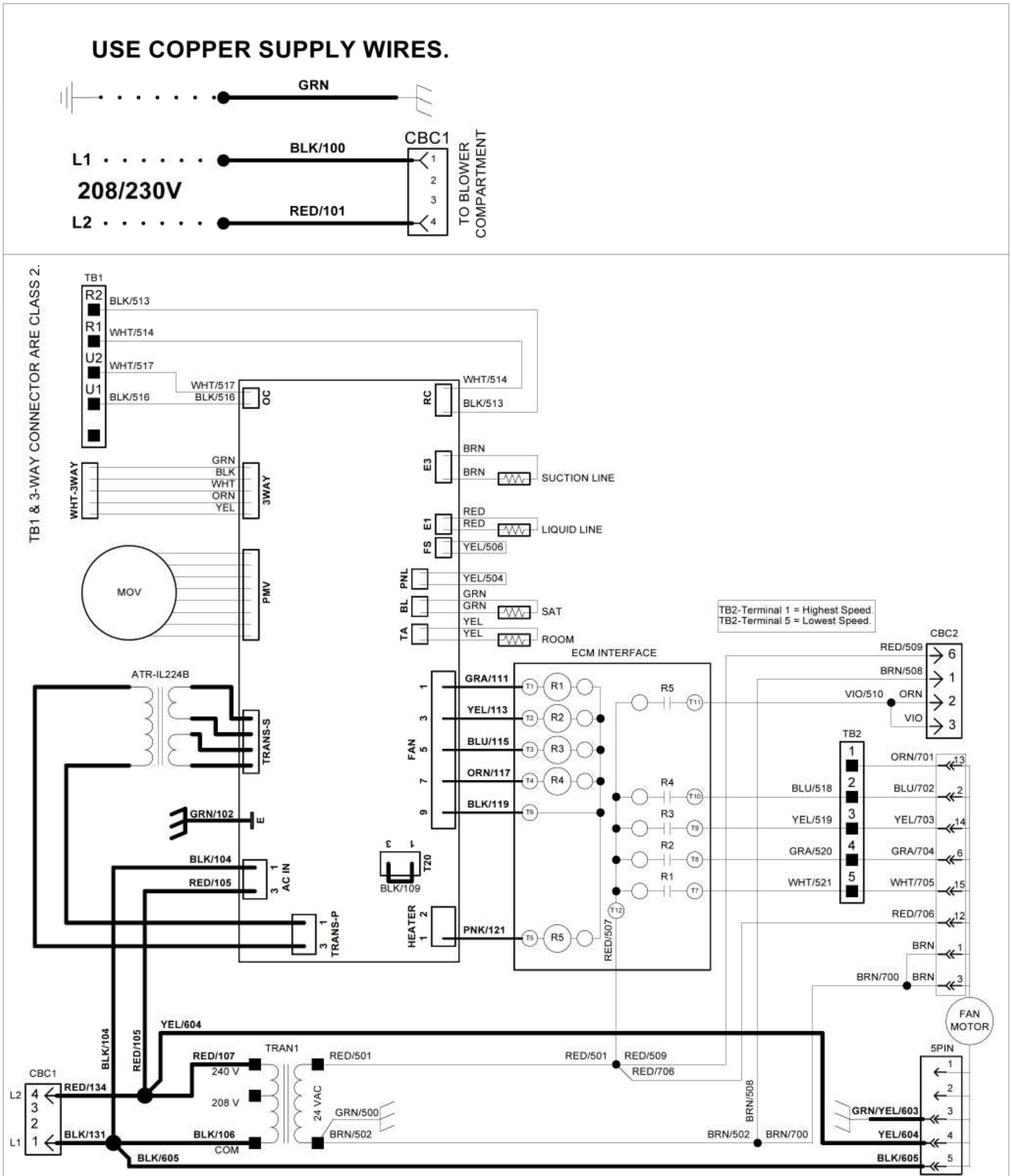


Figure 13
Branched Inter-Unit Control Wiring

If branching the inter-unit control wiring, the number of branch points should be 16 or fewer. (Branches less than 3.3 ft. are not included in the total branch number.)

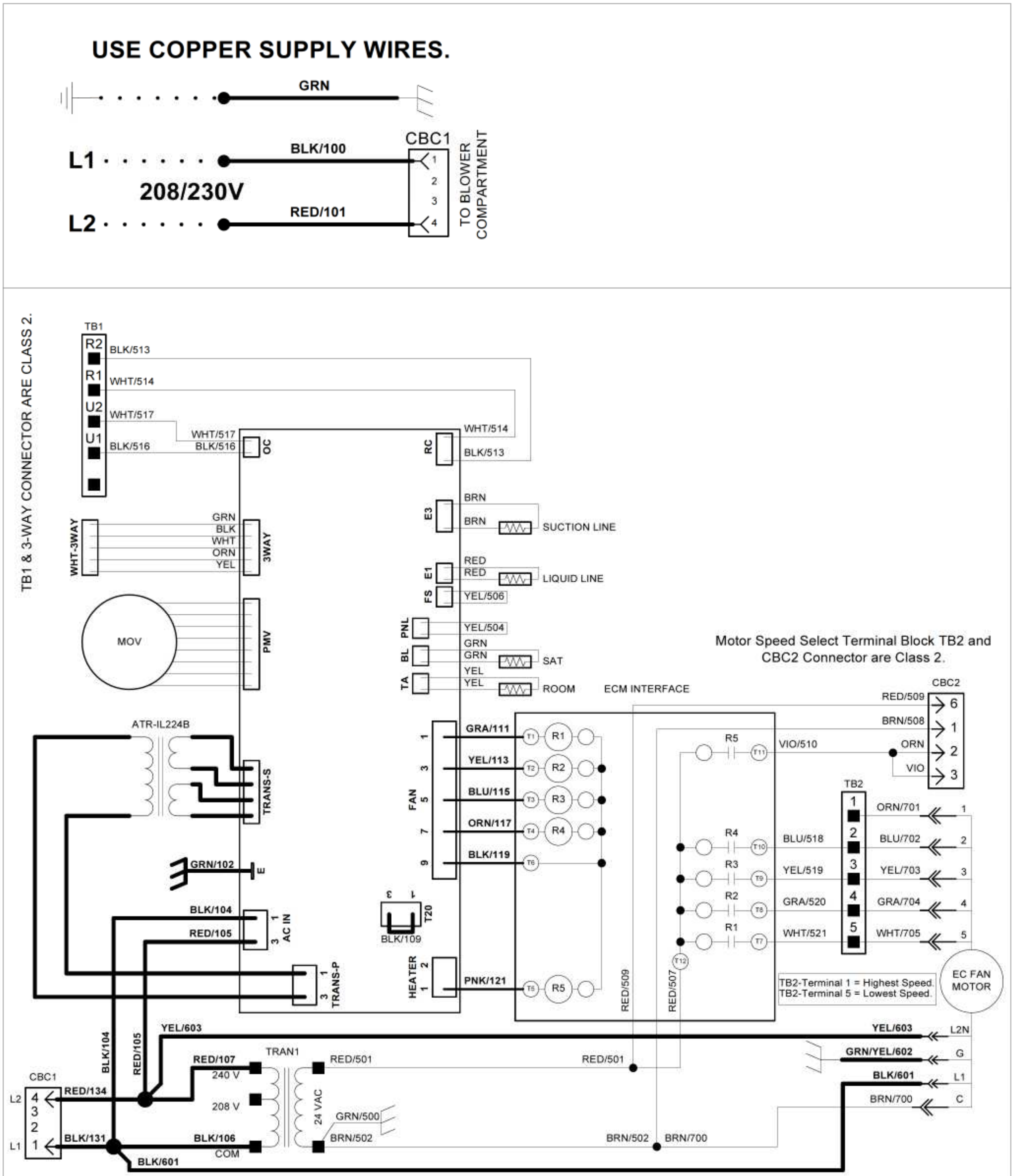
TYPICAL WIRING DIAGRAM—
Unit sizes 18 & 24



＞＞	HARNESS CONNECTION	DISC	DISCONNECT
●	SPLICE	FR	FAN RELAY
■	CONNECTION POINT	FU	FUSE
✕	INSULATED WIRE	LS	LIMIT SWITCH
	FACTORY WIRING	SEQ	HEAT SEQUENCER
	OPTIONAL WIRING	SW	SWITCH
	WIRES BY OTHERS	TRAN	TRANSFORMER
	CHASSIS GROUND	TB	TERMINAL BLOCK
	EARTH GROUND	TDR	TIME DELAY RELAY

TYPICAL WIRING—MVA18, MVA24

TYPICAL WIRING DIAGRAM—
Unit sizes 30, 36, 42, 48 & 60

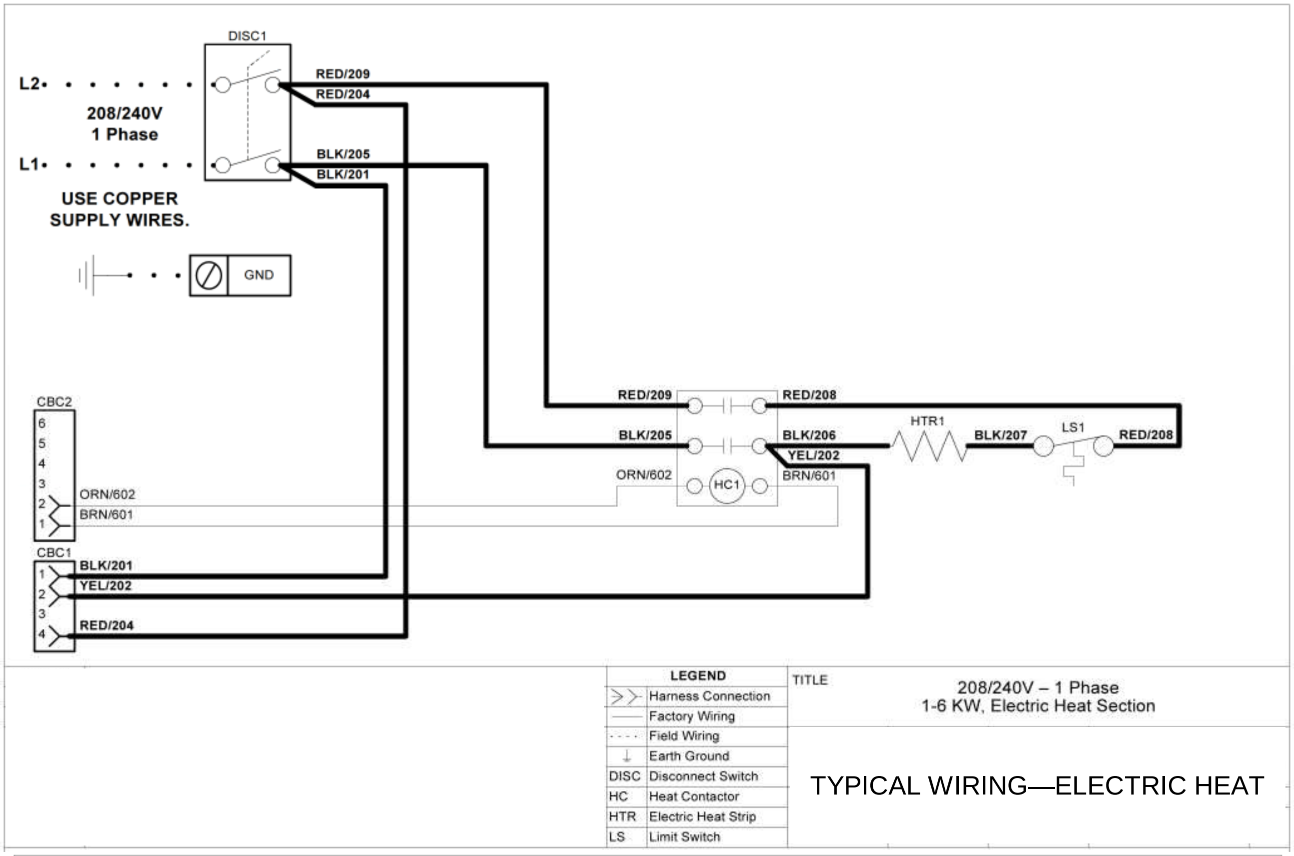


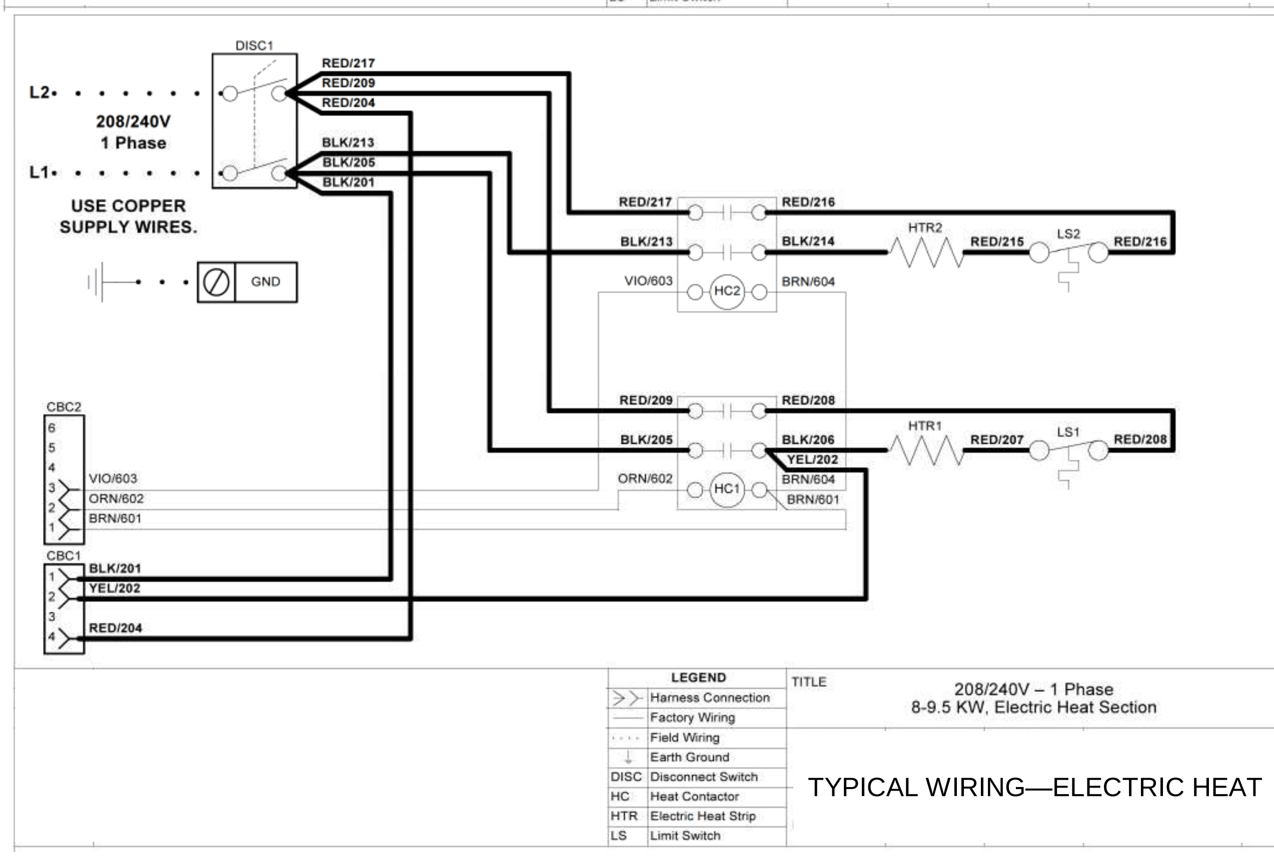
➤➤	HARNESS CONNECTION	DISC	DISCONNECT
●	SPLICE	FR	FAN RELAY
■	CONNECTION POINT	FU	FUSE
✕	INSULATED WIRE	LS	LIMIT SWITCH
——	FACTORY WIRING	SEQ	HEAT SEQUENCER
- - -	OPTIONAL WIRING	SW	SWITCH
	WIRES BY OTHERS	TRAN	TRANSFORMER
	CHASSIS GROUND	TB	TERMINAL BLOCK
	EARTH GROUND	TDR	TIME DELAY RELAY

TYPICAL WIRING—MVA30, MVA36, MVA42, MVA48, MVA60

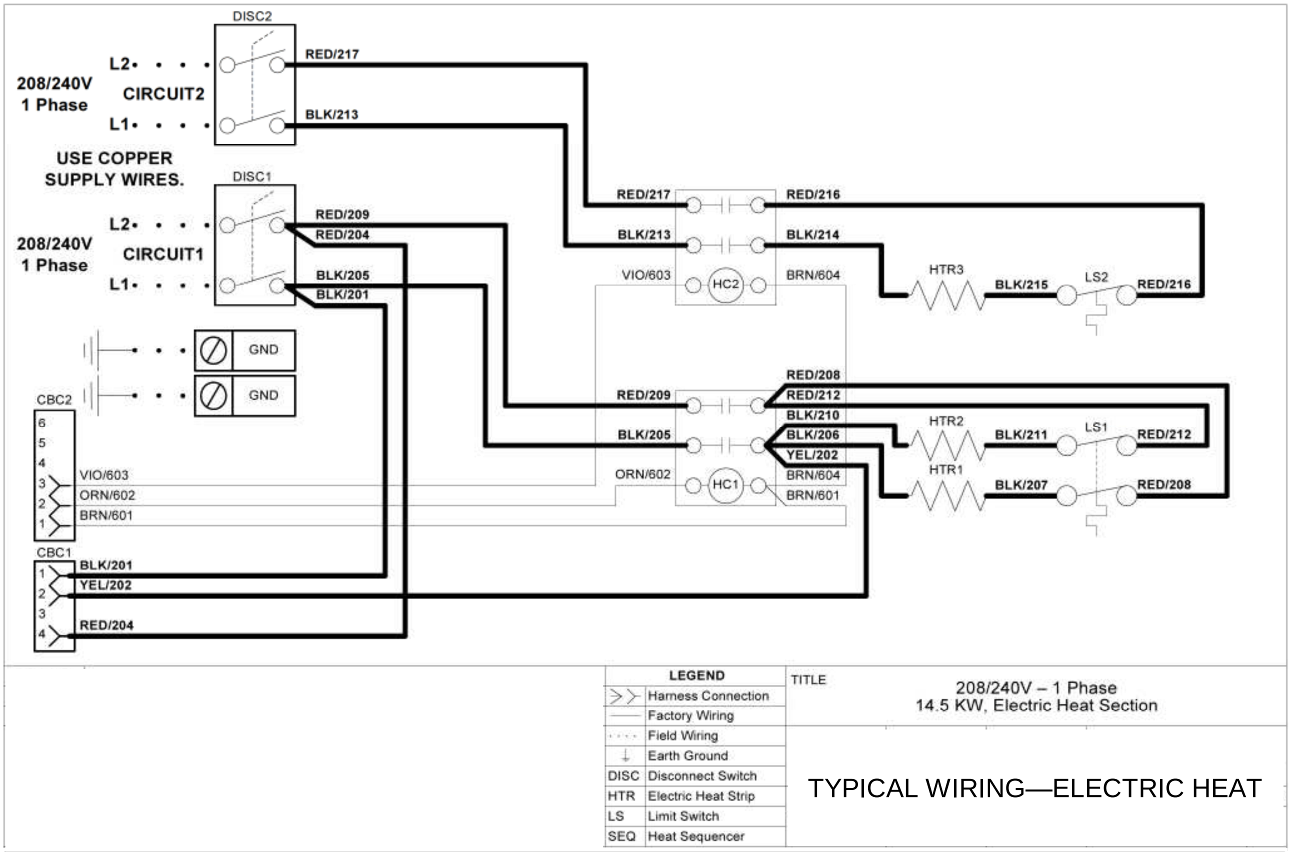
TYPICAL WIRING DIAGRAMS—

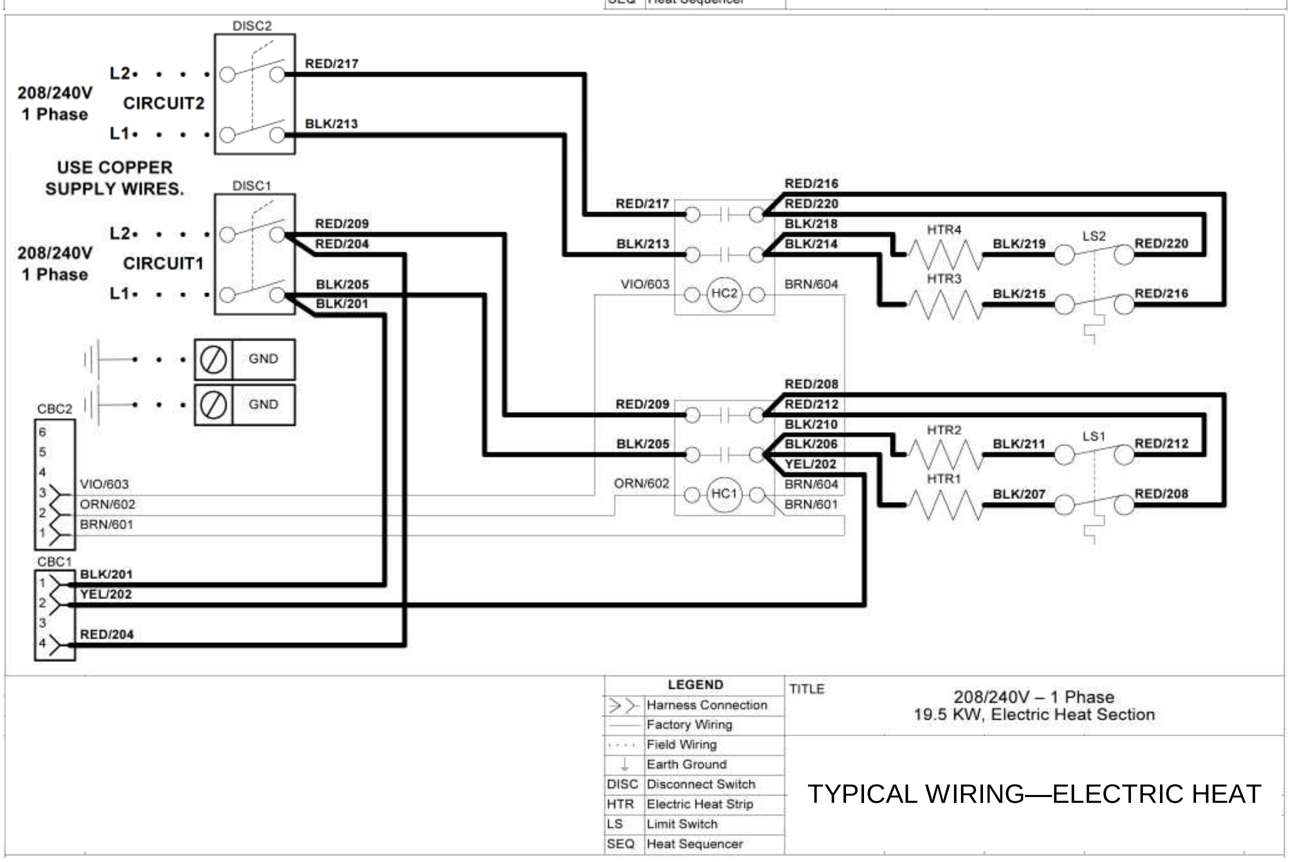
Electric Heat: 1-6kW and 8-9.5kW





TYPICAL WIRING DIAGRAMS—
Electric Heat: 14.5kW and 19.5kW





START-UP

Pre-Startup

Building Envelope—All building windows and doors should be installed and closed before starting unit. During summer construction, avoid unit sweating by allowing for gradual pull down: use reduced capacity and use maximum available airflow.

Temperature Controls-Check that unit is connected to the controls system and communicating properly.

Outside Air and Freeze Protection

WARNING: Insure that the property is protected against freezing conditions Failure to provide freeze protection may result in property damage. Freeze protection measures are customer-provided and installed and include but are not limited to low-limit thermostats, automatic temperature controls, and outside air dampers.

Startup

1. Insure electrical installation agrees with the unit nameplate (voltage, branch circuit protection, wire size).
2. Close all panels and access doors. Make sure filter media is clean before starting unit. Replace filter if necessary.
3. Verify that discharge ductwork and input plenum are in place and secure.
4. Apply power to unit. If unit is equipped with on-board power switch(es), turn switch(es) to the "On" position.
5. Insure that controls system has power and is operational.
6. Force control system to send fan on signal and speed signal. Refer to unit wiring diagram and electrical section for fan speed control arrangement.
7. Fan should start and run. Make sure fan operates without significant noise or vibration.
8. Allow control system to start condensing unit, or as required for the installation.
9. Complete the checklist on the Start-Up Report.
10. Follow additional startup procedures for the system as required by the condensing unit.

Fan Airflow Step-Up

If the duct system ESP is higher than planned and increased Air Handler ESP is needed, shift the terminals as shown in Figure 15.

Refer to Airflow tables and curves for airflow performance.

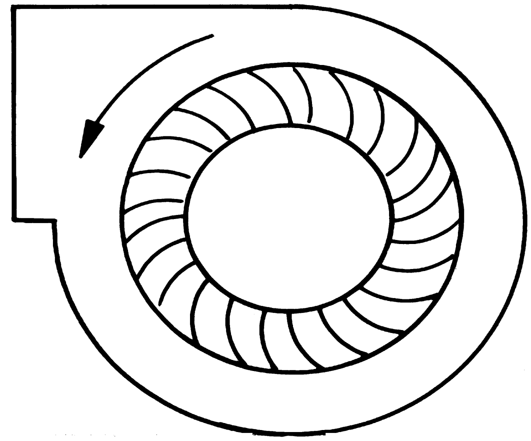


Fig. 14 — Fan Wheel Rotation— FORWARD CURVED FAN

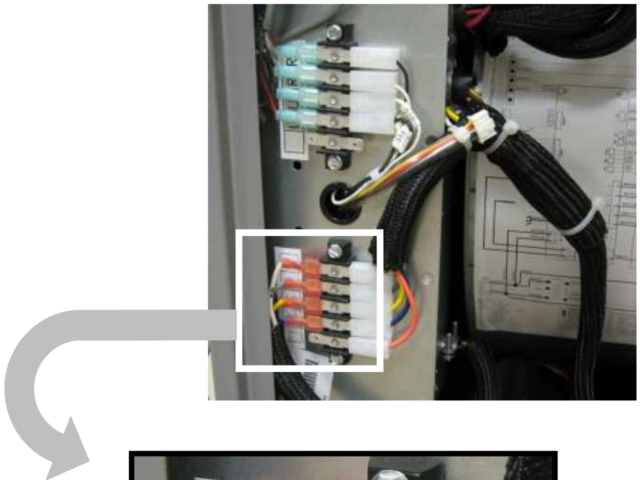
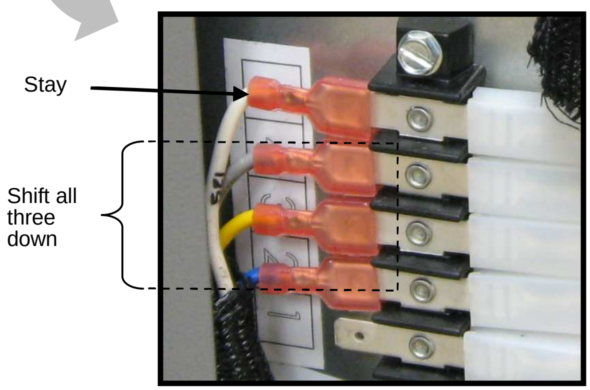
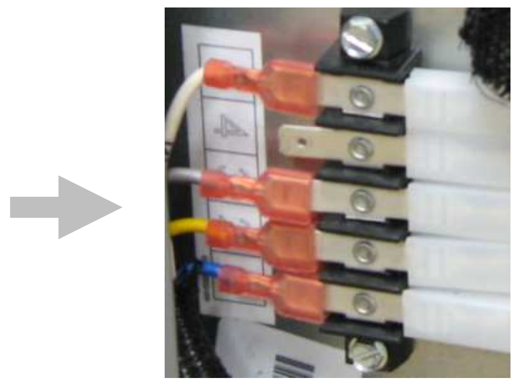


Figure 15
Increasing ESP setting



As Shipped



Higher Fan Setting

Airflow Performance

Areas not recommend for operation due to excess velocity

MVA18

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	969	833	188	1022	804	197	1067	780	206	1132	743	215	1173	711	222	1201	666	224
High	902	774	156	955	749	163	1016	717	173	1067	690	181	1102	656	193	1144	611	201
Medium	898	772	152	960	737	160	1012	711	169	1091	669	176	1132	633	182	1158	569	187
Low	827	711	116	897	670	123	956	641	131	1050	596	137	1090	555	142	1115	473	149

MVA24

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	1236	1052	394	1265	1034	396	1301	996	383	1327	953	345	1351	897	340	1430	838	261
High	1109	959	284	1155	929	296	1198	908	302	1233	882	311	1284	849	319	1304	780	302
Medium	969	833	188	1022	804	197	1067	780	206	1132	743	215	1173	711	222	1201	666	224
Low	902	774	156	955	749	163	1016	717	173	1067	690	181	1102	656	193	1144	611	201

MVA30

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	828	1263	275	851	1221	287	865	1186	286	898	1142	301	922	1105	306	915	1082	309
High	764	1160	219	795	1114	224	819	1076	239	843	1037	241	825	1014	243	874	975	251
Medium	708	1064	171	737	1017	175	758	973	178	794	932	190	785	886	194	856	844	204
Low	630	940	121	663	892	125	693	835	130	730	797	138	750	743	143	806	696	152

MVA36

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	934	1425	406	943	1396	414	966	1358	417	988	1319	426	1005	1279	432	1032	1246	440
High	881	1342	393	900	1311	347	920	1271	356	939	1229	356	967	1195	365	986	1160	370
Medium	764	1160	219	795	1114	224	819	1076	239	843	1037	241	825	1014	243	874	975	251
Low	708	1064	171	737	1017	175	758	973	178	794	932	190	785	886	194	856	844	204

MVA42

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	967	1722	525	985	1679	529	1009	1642	541	1029	1597	546	1050	1557	558	1071	1510	567
High	835	1475	332	862	1425	343	890	1388	353	918	1335	365	940	1287	372	970	1238	370
Medium	760	1311	248	784	1271	258	803	1229	263	834	1195	274	870	1151	286	900	1114	290
Low	717	1228	211	742	1184	218	767	1140	225	803	1099	236	840	1046	246	878	994	254

MVA48

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	1057	1894	1040	1080	1872	1031	1093	1816	1020	1104	1764	1010	1109	1685	990	1122	1629	975
High	967	1722	525	985	1679	529	1009	1642	541	1029	1597	546	1050	1557	558	1071	1510	567
Medium	835	1475	332	862	1425	343	890	1388	353	918	1335	365	940	1287	372	970	1238	370
Low	760	1311	248	784	1271	258	803	1229	263	834	1195	274	870	1151	286	900	1114	290

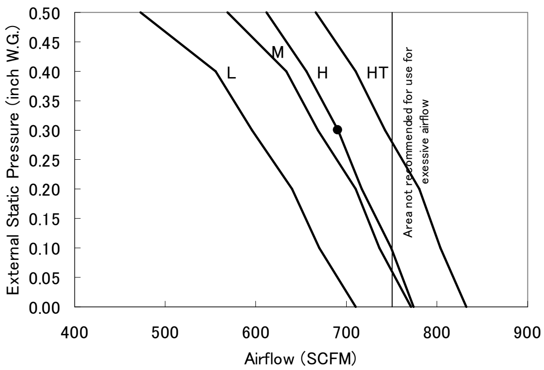
MVA60

	ESP 0.000			0.100			0.200			0.300			0.400			0.500		
Fan Setting	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**	**RPM**	**SCFM**	**WATTS**
High Top	982	2323	1010	1010	2269	1040	1037	2222	1050	1064	2180	1070	1093	2132	1090	1115	2092	1110
High	878	2082	699	909	2027	711	946	1959	733	979	1932	754	1007	1889	771	1038	1844	791
Medium	760	1793	427	807	1716	450	825	1667	466	873	1623	488	913	1577	506	956	1517	520
Low	689	1603	314	724	1544	326	761	1489	342	805	1425	362	846	1373	380	890	1335	400

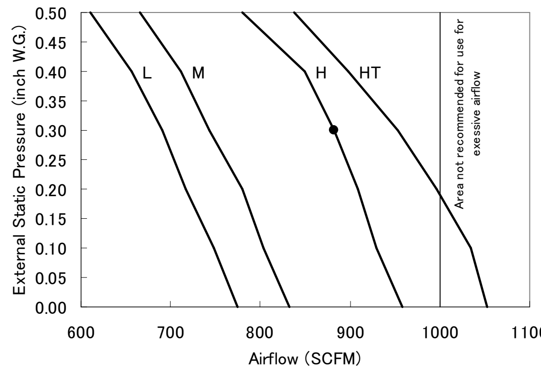
NOTES:
1. Data at sea level w/ 1" throw-away filter and dry coil.

Airflow Performance Curves

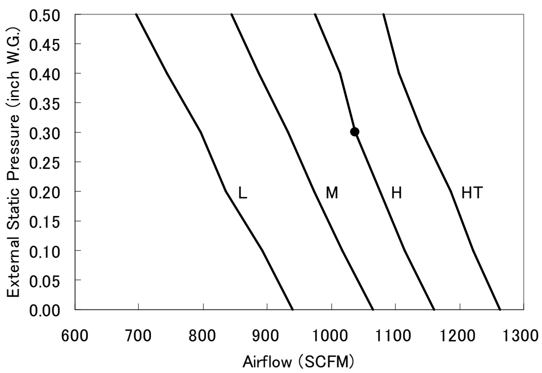
MVA18



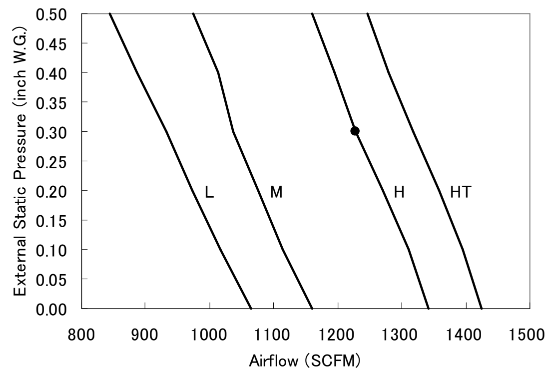
MVA24



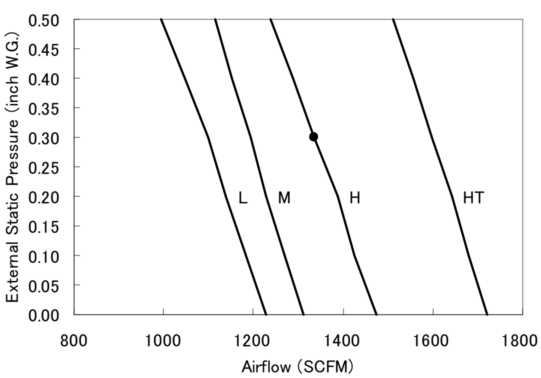
MVA30



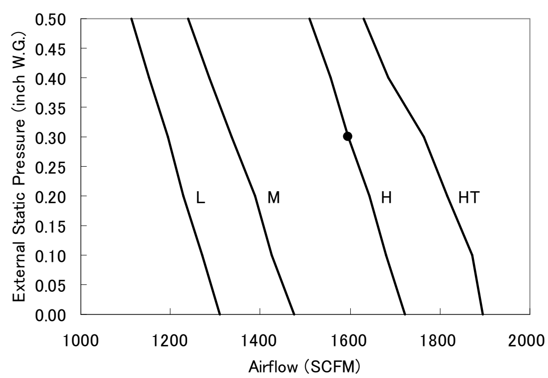
MVA36



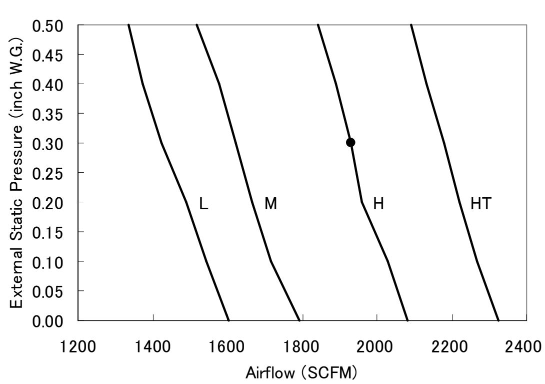
MVA42



MVA48



MVA60



DANGER
NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running. LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag. Electric shock can cause personal injury or death. LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters. Failure to follow these warnings could lead to personal injury or death.

SERVICE

General

1. Review Safety Considerations at beginning of these instructions. Good safety habits are important tools when performing service procedures.
2. To make speed measurements, use a laser-style tachometer.

Fan Motor Replacement

WARNING: Shut off motor power and lock out power supply.

Remove Blower/Motor Assembly
Procedure:

1. Disconnect wiring harness plugs from motor (Fig. 16 and 17).
2. Remove blower mounting bolts, which secure the blower rails upward against the blower deck (2ea).
3. Remove motor/wheel assembly from the AHU by sliding out (Figure 18).
4. See Figure 19. Loosen shaft set screw (opposite motor side) and motor mount tightening screw until motor can be removed.
5. Remove motor. Install new motor (Fig. 20), tighten motor mount bolt, then locate fan wheel and tighten shaft set screw.
6. Reverse steps 1-4 to reinstall fan. Make sure that the two clips at the back hold the blower rails up against the blower deck.
7. Spin fan by hand to make sure there is no rubbing or interference.
8. Close unit access doors, remove lockout/tag out and restore the unit to operation.

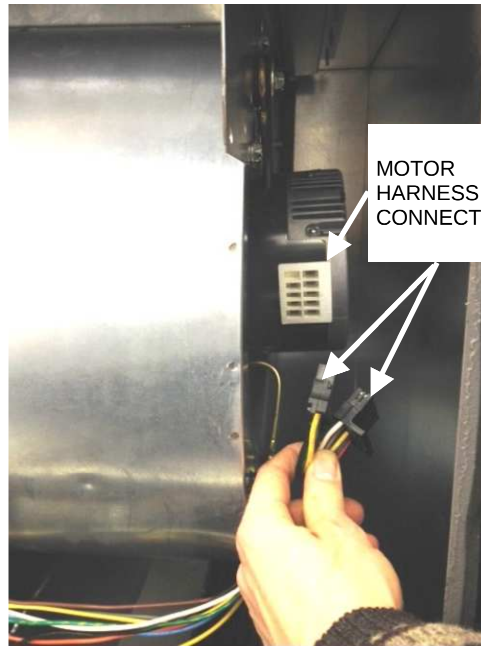


Figure 16

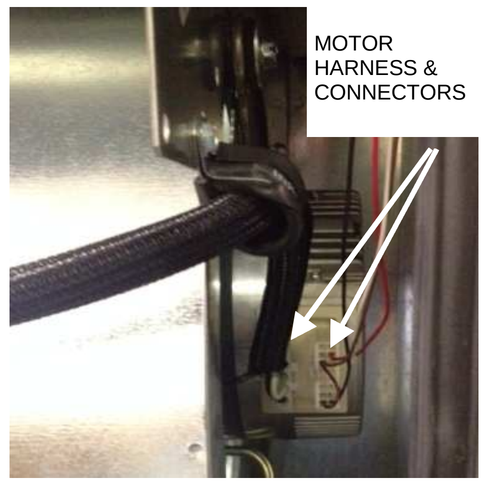


Figure 17

DANGER
NEVER enter an enclosed fan cabinet or reach into a unit while the fan is running. LOCK OPEN AND TAG the fan motor power disconnect switch before working on a fan. Take fuses with you and note removal on tag. Electric shock can cause personal injury or death. LOCK OPEN AND TAG the electric heat coil power disconnect switch before working on or near heaters. Failure to follow these warnings could lead to personal injury or death.

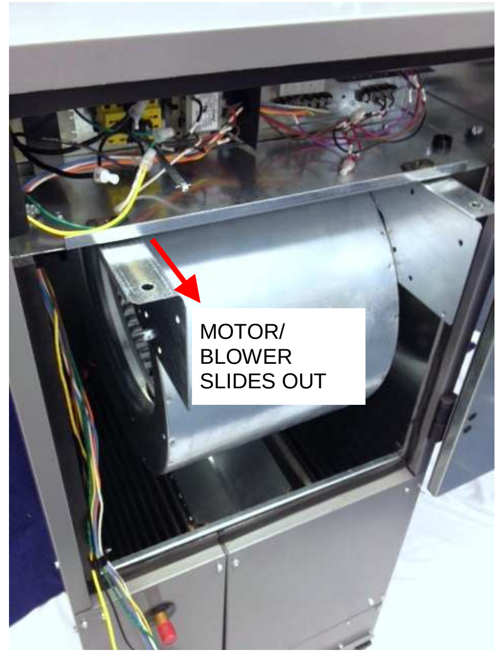


Figure 18

Fan System Periodic Maintenance

1. The factory strongly recommends use of a Preventive Maintenance program to insure that the unit operates safely and efficiently.
2. Motor bearings are permanently sealed and do not require lubrication.
3. Clean the fan's flow area - maintenance interval in accordance with the degree of contamination.
4. The fan wheel can be cleaned with a moist cloth.
5. Do not use any aggressive, paint solvent cleaning agents when cleaning.
6. Never use a high-pressure cleaner or water-spray for cleaning - particularly when the fan is running.

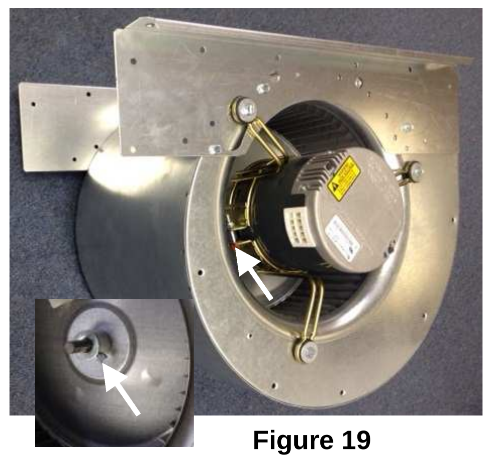


Figure 19

Coil Cleaning

DETERGENT — Spray mild detergent solution on coils with garden-type sprayer. Rinse with fresh water. Check to ensure condensate line is free. Excess water from cleaning may flood unit if condensate line is plugged.

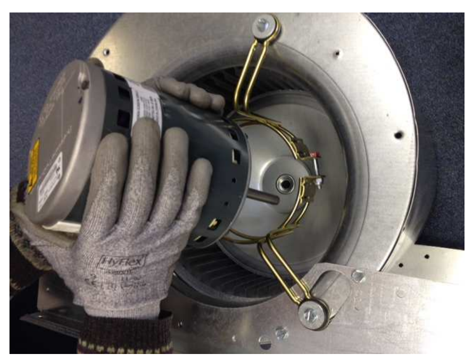


Figure 20

SERVICE—Filters

Filters

FILTER SECTIONS — Open or remove filter panel to replace old filter with a new filter. See physical data tables for filter data. See Figure 21.

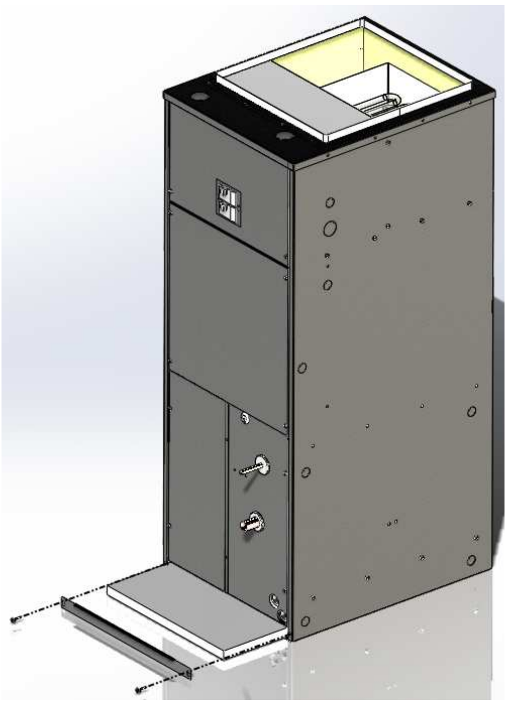


Figure 21

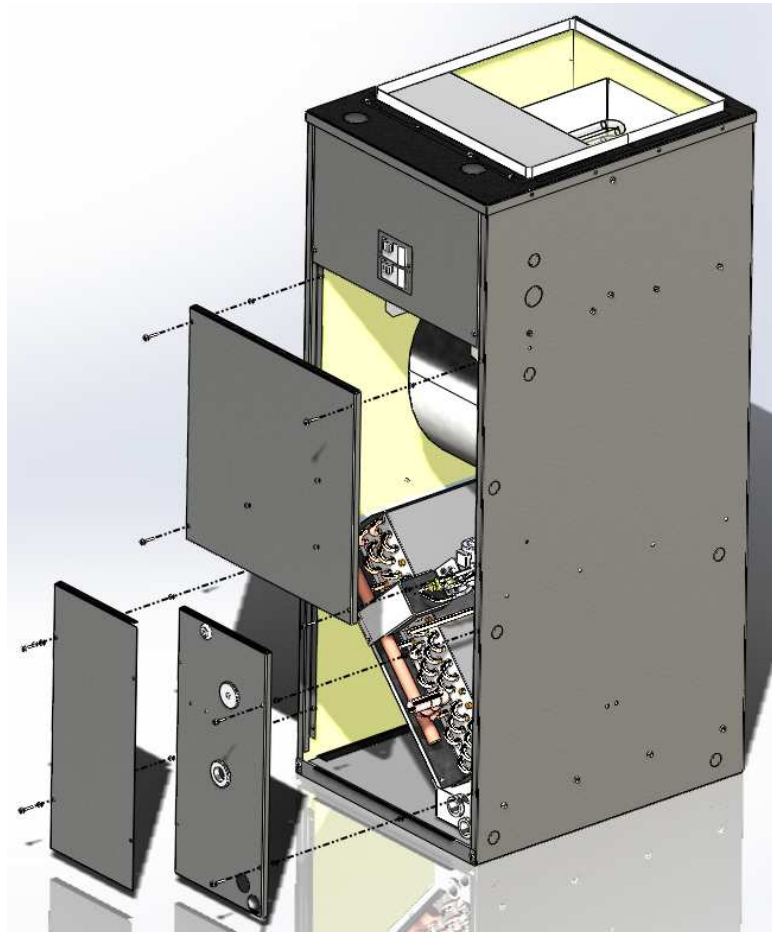


Figure 22

Access Panels

The 3 sections of the unit can be reached using the front access panels, removable using 5/16" socket or driver or flat head screwdriver. See Figure 22.

SERVICE-Coil Removal and Reinstallation Procedure

1. Perform procedure on the ground for safety. If working at heights USE EXTREME CAUTION observe all FALL SAFETY considerations. Under all conditions, LOCK OUT all power supplies before performing this procedure. WARNING! Coil section can be heavy—use proper lifting equipment.
2. Isolate coil and reclaim refrigerant. Disconnect unit from piping. Remove supply piping to allow access into the coil section from the front.
3. Remove blower access door and coil access doors.
4. Carefully remove temperature sensors from the coil and set them aside, clear of the coil & drain pan assembly. Disconnect electronic expansion valve (EEV) wiring from the EEV.
5. Remove 4 screws on the drain pan side of the cabinet (right side shown in Fig. 23). Remove 4 screws from coil support side of the cabinet (left side shown in Fig. 23).
6. Slide coil & drain pan assembly out of the unit (Fig 19).
7. Coil can be detached from drain pan using 5/16" driver, 2 screws. Coil can be detached from coil support using 5/16" driver, 4 screws.
8. Follow instructions in reverse to install new coil.
9. Re-install sensors back in original positions. CAUTION! Be sure to place sensors in correct locations for proper unit operation.
10. Re-install wiring to EEV.
11. Re-install unit access panels.
12. Return unit to service.

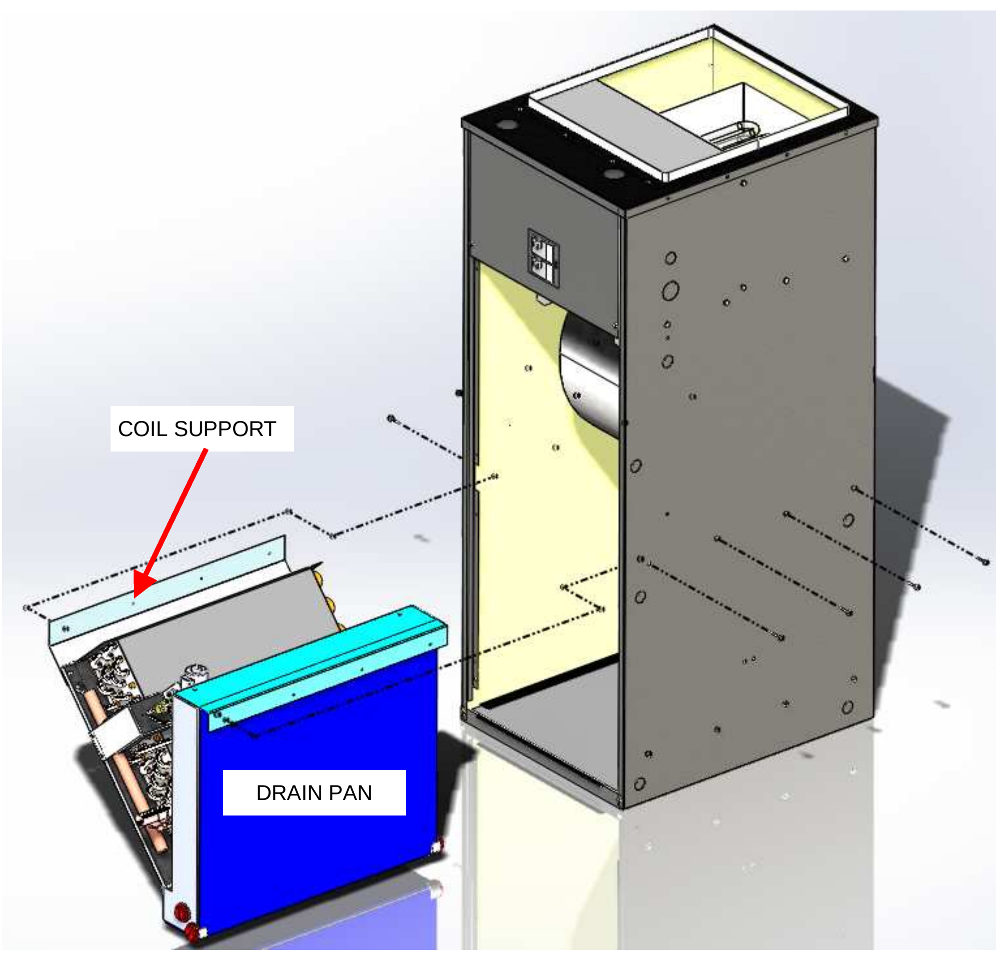


Figure 23

MVA Electrical Data

MVA Unit Size	MOTOR FLA 240-208V	TOTAL ELECTRIC HT (KW)		ELECTRIC HEAT AMPS				UNIT FLA				MINIMUM CIRCUIT AMPACITY				Maximum Overcurrent Protective Device (A)				MIN WIRE SIZE AWG*
				CIRCUIT 1		CIRCUIT 2		CIRCUIT 1		CIRCUIT 2		CIRCUIT 1		CIRCUIT 2		CIRCUIT 1		CIRCUIT 2		
		240	208	240	208	240	208	240	208	240	208	240	208	240	208	240	208	240	208	
18/24	3.0	NONE		NONE		NONE		3.0	3.0	n/a	n/a	3.8	3.8	n/a	n/a	15	15	n/a	n/a	14
		1.0	0.8	4.2	3.6	0.0	0.0	7.2	6.6	n/a	n/a	9.0	8.3	n/a	n/a	15	15	n/a	n/a	14
		3.0	2.3	12.5	10.8	0.0	0.0	15.5	13.8	n/a	n/a	19.4	17.3	n/a	n/a	20	20	n/a	n/a	12
		5.0	3.8	20.8	18.1	0.0	0.0	23.8	21.1	n/a	n/a	29.8	26.3	n/a	n/a	30	30	n/a	n/a	10
		6.0	4.5	25.0	21.7	0.0	0.0	28.0	24.7	n/a	n/a	35.0	30.8	n/a	n/a	35	35	n/a	n/a	8
		8.0	6.0	33.3	28.9	0.0	0.0	36.3	31.9	n/a	n/a	45.4	39.9	n/a	n/a	50	40	n/a	n/a	8
		9.5	7.1	39.6	34.3	0.0	0.0	42.6	37.3	n/a	n/a	53.2	46.6	n/a	n/a	60	50	n/a	n/a	6
30/36	3.6	NONE		NONE		NONE		3.6	3.6	n/a	n/a	4.5	4.5	n/a	n/a	15	15	n/a	n/a	14
		1.0	0.8	4.2	3.6	0.0	0.0	7.8	7.2	n/a	n/a	9.7	9.0	n/a	n/a	15	15	n/a	n/a	14
		3.0	2.3	12.5	10.8	0.0	0.0	16.1	14.4	n/a	n/a	20.1	18.0	n/a	n/a	25	20	n/a	n/a	10
		5.0	3.8	20.8	18.1	0.0	0.0	24.4	21.7	n/a	n/a	30.5	27.1	n/a	n/a	35	30	n/a	n/a	8
		6.0	4.5	25.0	21.7	0.0	0.0	28.6	25.3	n/a	n/a	35.8	31.6	n/a	n/a	40	35	n/a	n/a	8
		8.0	6.0	33.3	28.9	0.0	0.0	36.9	32.5	n/a	n/a	46.2	40.6	n/a	n/a	50	45	n/a	n/a	8
		9.5	7.1	39.6	34.3	0.0	0.0	43.2	37.9	n/a	n/a	54.0	47.4	n/a	n/a	60	50	n/a	n/a	6
		14.5	10.9	39.6	34.3	20.8	18.1	43.2	37.9	20.8	18.1	54.0	47.4	26.0	22.6	60	50	30	25	6
42	4.9	NONE		NONE		NONE		4.9	4.9	n/a	n/a	6.1	6.1	n/a	n/a	15	15	n/a	n/a	14
		1.0	0.8	4.2	3.6	0.0	0.0	9.1	8.5	n/a	n/a	11.3	10.6	n/a	n/a	15	15	n/a	n/a	14
		3.0	2.3	12.5	10.8	0.0	0.0	17.4	15.7	n/a	n/a	21.8	19.7	n/a	n/a	25	20	n/a	n/a	10
		5.0	3.8	20.8	18.1	0.0	0.0	25.7	23.0	n/a	n/a	32.2	28.7	n/a	n/a	35	30	n/a	n/a	10
		6.0	4.5	25.0	21.7	0.0	0.0	29.9	26.6	n/a	n/a	37.4	33.2	n/a	n/a	40	35	n/a	n/a	8
		8.0	6.0	33.3	28.9	0.0	0.0	38.2	33.8	n/a	n/a	47.8	42.2	n/a	n/a	50	45	n/a	n/a	8
		9.5	7.1	39.6	34.3	0.0	0.0	44.5	39.2	n/a	n/a	55.6	49.0	n/a	n/a	60	50	n/a	n/a	6
		14.5	10.9	39.6	34.3	20.8	18.1	44.5	39.2	20.8	18.1	55.6	49.0	26.0	22.6	60	50	30	25	6
		19.5	14.6	39.6	34.3	41.7	36.1	44.5	39.2	41.7	36.1	55.6	49.0	52.1	45.1	60	50	60	50	6
48	6.0	NONE		NONE		NONE		6.0	6.0	n/a	n/a	7.5	7.5	n/a	n/a	15	15	n/a	n/a	14
		1.0	0.8	4.2	3.6	0.0	0.0	10.2	9.6	n/a	n/a	12.7	12.0	n/a	n/a	15	15	n/a	n/a	14
		3.0	2.3	12.5	10.8	0.0	0.0	18.5	16.8	n/a	n/a	23.1	21.0	n/a	n/a	25	25	n/a	n/a	10
		5.0	3.8	20.8	18.1	0.0	0.0	26.8	24.1	n/a	n/a	33.5	30.1	n/a	n/a	35	35	n/a	n/a	10
		6.0	4.5	25.0	21.7	0.0	0.0	31.0	27.7	n/a	n/a	38.8	34.6	n/a	n/a	40	35	n/a	n/a	8
		8.0	6.0	33.3	28.9	0.0	0.0	39.3	34.9	n/a	n/a	49.2	43.6	n/a	n/a	50	45	n/a	n/a	8
		9.5	7.1	39.6	34.3	0.0	0.0	45.6	40.3	n/a	n/a	57.0	50.4	n/a	n/a	60	60	n/a	n/a	6
		14.5	10.9	39.6	34.3	20.8	18.1	45.6	40.3	20.8	18.1	57.0	50.4	26.0	22.6	60	60	30	25	6
		19.5	14.6	39.6	34.3	41.7	36.1	45.6	40.3	41.7	36.1	57.0	50.4	52.1	45.1	60	60	60	50	6
60	7.6	NONE		NONE		NONE		7.6	7.6	n/a	n/a	9.5	9.5	n/a	n/a	15	15	n/a	n/a	14
		1.0	0.8	4.2	3.6	0.0	0.0	11.8	11.2	n/a	n/a	14.7	14.0	n/a	n/a	15	15	n/a	n/a	14
		3.0	2.3	12.5	10.8	0.0	0.0	20.1	18.4	n/a	n/a	25.1	23.0	n/a	n/a	30	25	n/a	n/a	10
		5.0	3.8	20.8	18.1	0.0	0.0	28.4	25.7	n/a	n/a	35.5	32.1	n/a	n/a	40	35	n/a	n/a	8
		6.0	4.5	25.0	21.7	0.0	0.0	32.6	29.3	n/a	n/a	40.8	36.6	n/a	n/a	45	40	n/a	n/a	8
		8.0	6.0	33.3	28.9	0.0	0.0	40.9	36.5	n/a	n/a	51.2	45.6	n/a	n/a	60	50	n/a	n/a	6
		9.5	7.1	39.6	34.3	0.0	0.0	47.2	41.9	n/a	n/a	59.0	52.4	n/a	n/a	60	60	n/a	n/a	6
		14.5	10.9	39.6	34.3	20.8	18.1	47.2	41.9	20.8	18.1	59.0	52.4	26.0	22.6	60	60	30	25	6
		19.5	14.6	39.6	34.3	41.7	36.1	47.2	41.9	41.7	36.1	59.0	52.4	52.1	45.1	60	60	60	50	6

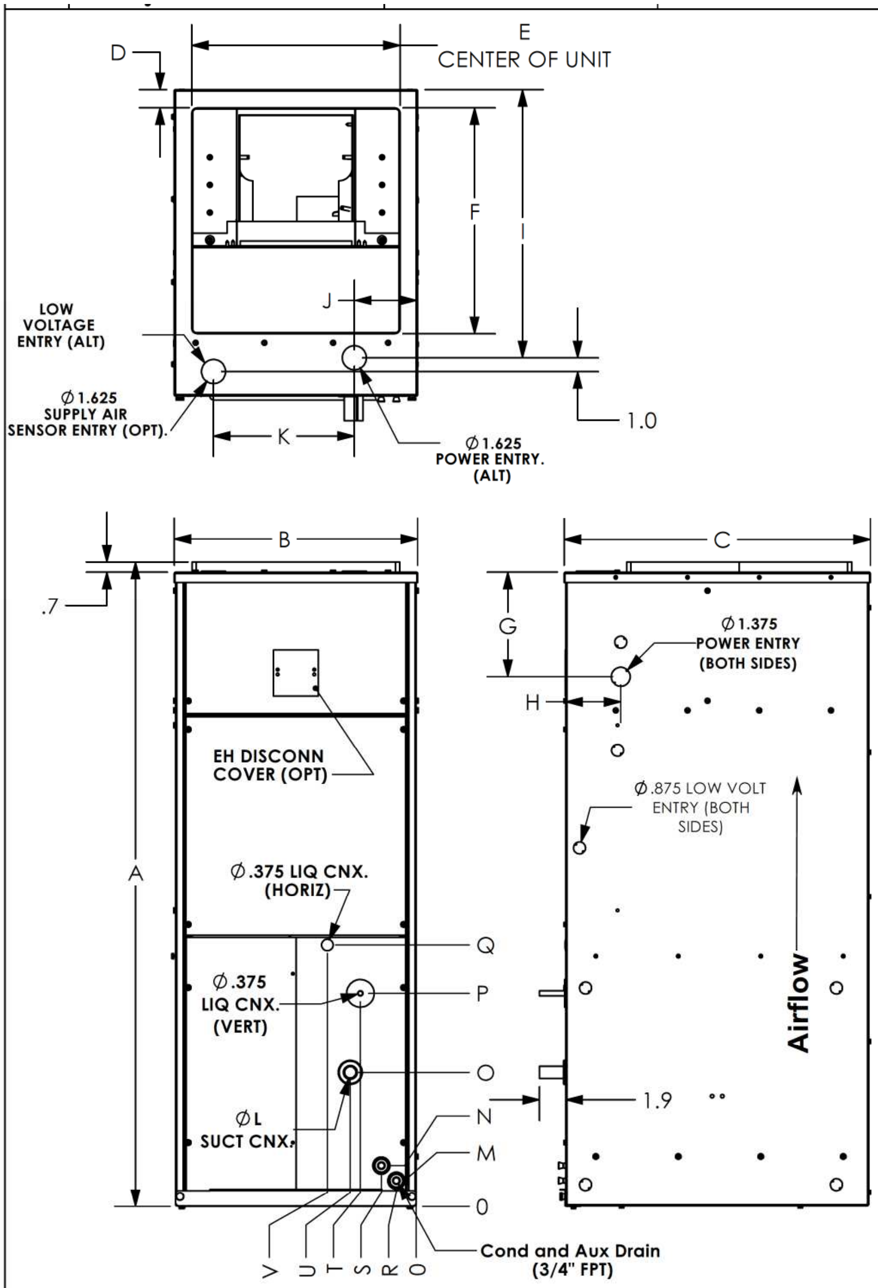
Notes:

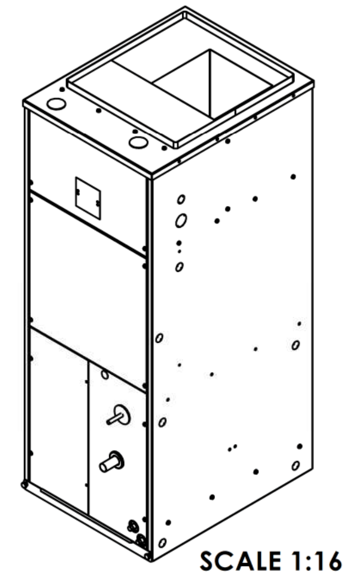
*1. Minimum Wire Gauge is based upon Circuit 1 ampacity and the use of 75C wire at the unit.

2. 14.5kW and 19.5kW Heating units require two supply circuits.

3. MVA18/24 use ECM 5.0 motor. MVA30/36/42/48/60 use ECM-VE motor.

MVA18-60 Elec Heat Ready
RH Drain Connections—Configuration B



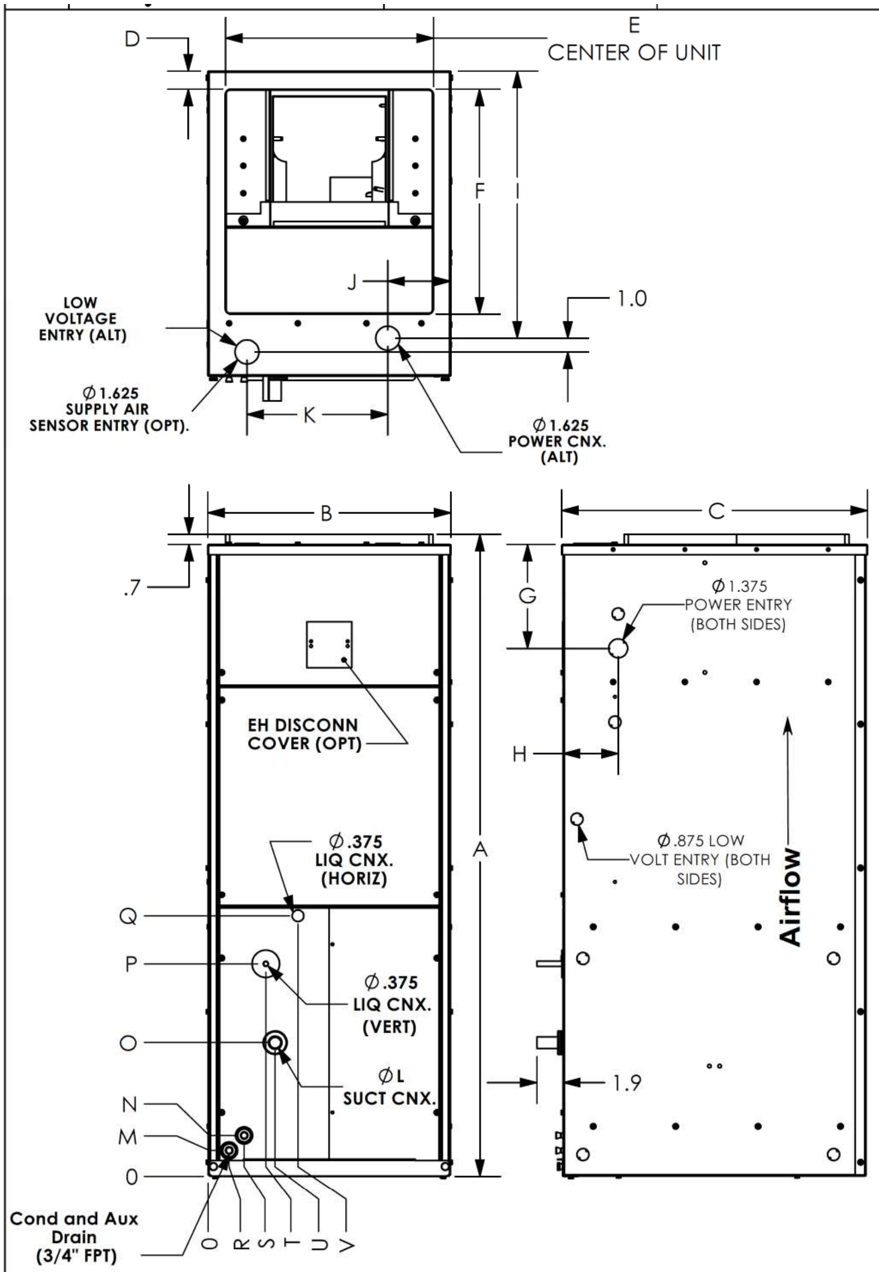


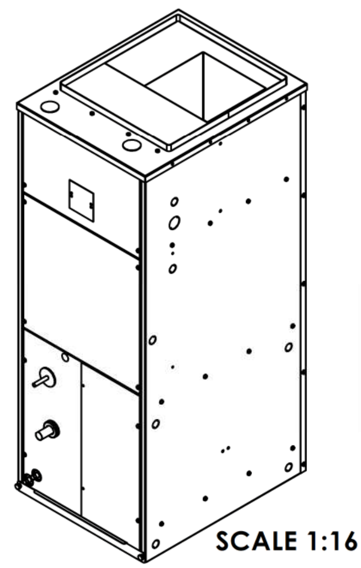
COIL CONNECTION

	MVA 18/24	MVA 30/36	MVA 42/48	MVA 60
L	.875	.875	.875	1.125
F	1.9	1.9	1.9	1.9
N	3.0	3.0	3.0	3.0
O	9.8	10.4	10.3	11.5
P	15.5	17.3	18.6	18.5
Q	19.0	21.2	22.4	22.3
R	1.4	2.0	1.6	1.6
S	2.5	3.1	2.7	2.7
T	4.1	5.5	6.1	6.2
U	4.8	5.3	5.1	4.9
V	6.5	7.9	8.4	8.5

	HEIGHT	WIDTH	DEPTH	DISCHARGE DUCT			ELECTRICAL CONN.				
MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
MVA18/24	46.9	17.7	22.3	1.3	15.2	16.4	7.6	4.0	19.5	4.6	10.2
MVA30/36	51.9	20.2	25.3	1.6	17.2	19.1	7.6	4.0	22.5	4.9	11.5
MVA42/48	55.9	22.2	27.3	1.6	19.2	21.2	7.6	4.0	24.4	5.8	12.7
MVA60	57.9	24.2	31.3	1.6	21.2	25.2	7.6	4.0	28.3	5.8	15.6

PRODUCT INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE

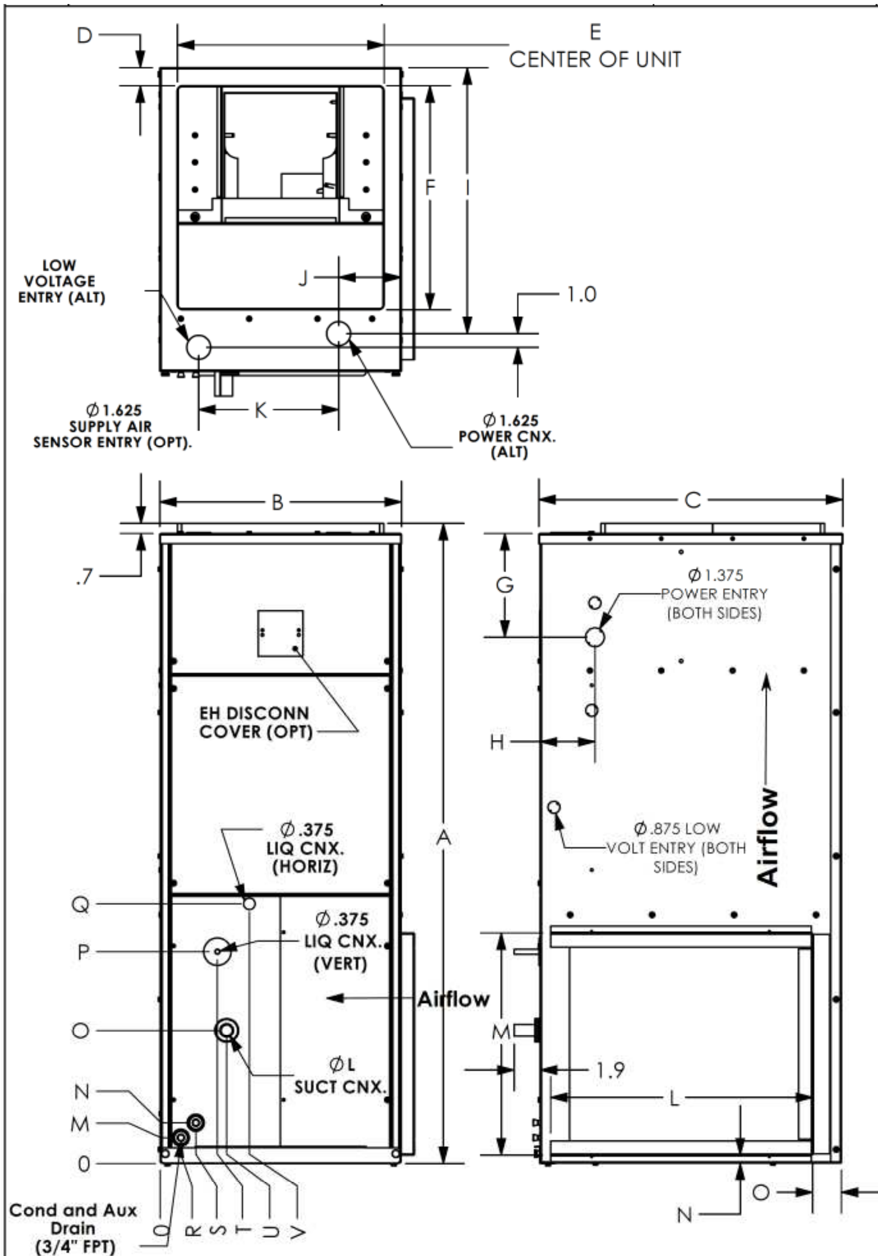


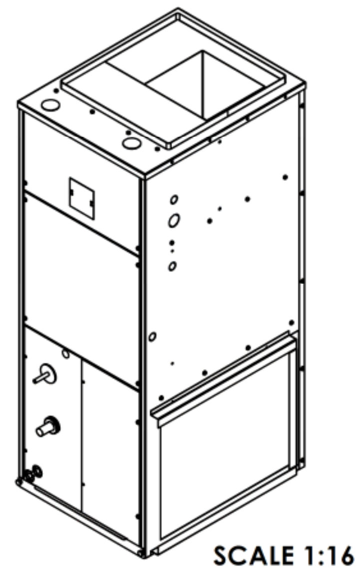


COIL CONNECTION

	MVA 18/24	MVA 30/36	MVA 42/48	MVA 60
L	.875	.875	.875	1.125
M	1.9	1.9	1.9	1.9
N	F	3.0	3.0	3.0
O	9.8	10.4	10.3	11.5
P	15.5	17.3	18.6	18.5
Q	19.0	21.2	22.4	22.3
R	1.4	2.0	1.6	1.6
S	2.5	3.1	2.7	2.7
T	4.1	5.5	6.1	6.2
U	4.8	5.3	5.1	4.9
V	6.5	7.9	8.4	8.5

	HEIGHT	WIDTH	DEPTH	DISCHARGE DUCT			ELECTRICAL CONN.				
MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
MVA18/24	46.9	17.7	22.3	1.3	15.2	16.4	7.6	4.0	19.5	4.6	10.2
MVA30/36	51.9	20.2	25.3	1.6	17.2	19.1	7.6	4.0	22.5	4.9	11.5
MVA42/48	55.9	22.2	27.3	1.6	19.2	21.2	7.6	4.0	24.4	5.8	12.7
MVA60	57.9	24.2	31.3	1.6	21.2	25.2	7.6	4.0	28.3	5.8	15.6



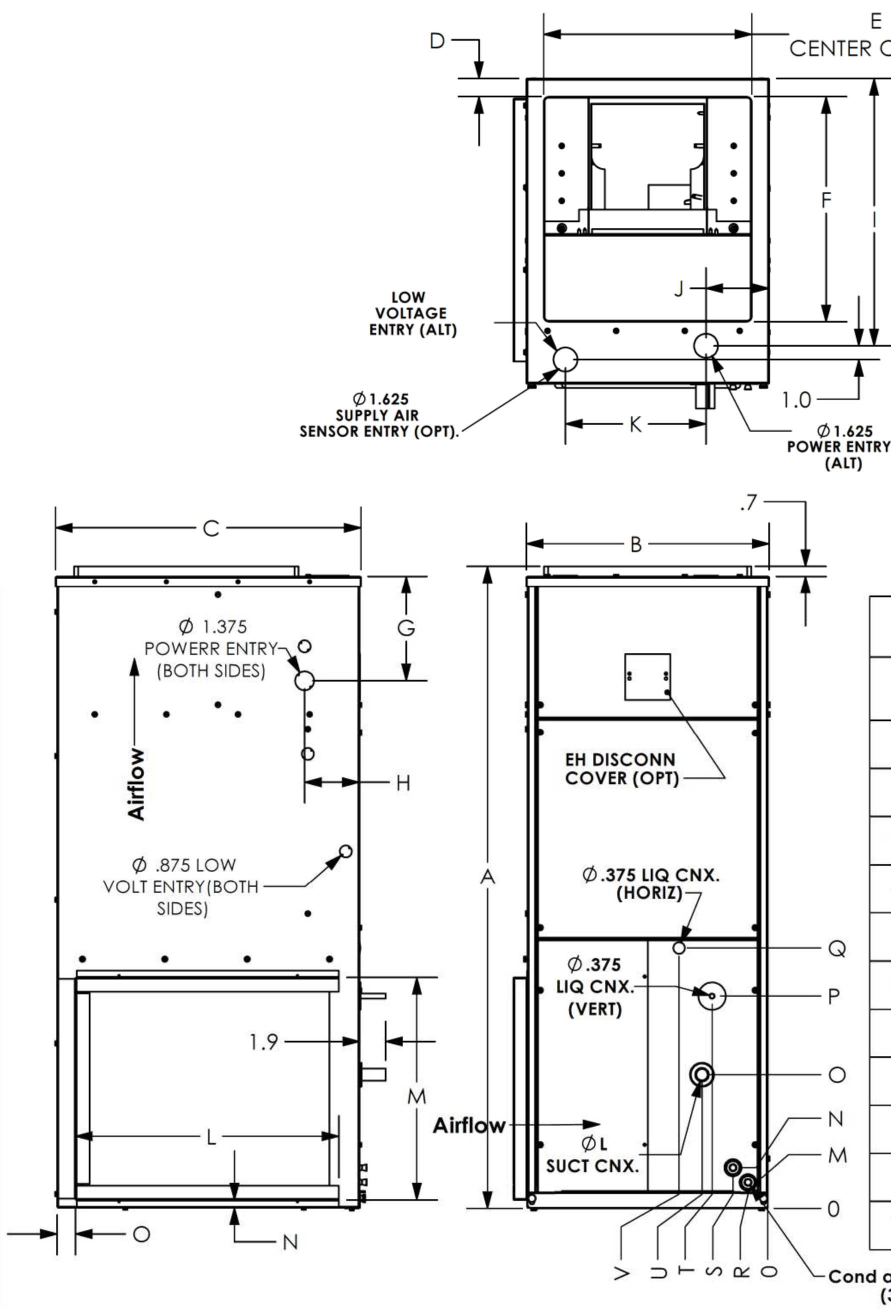


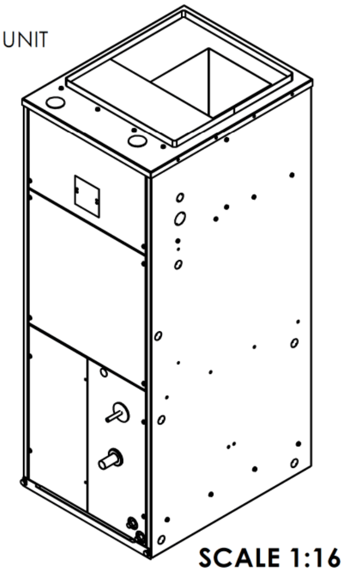
COIL CONNECTION				
	MVA 18/24	MVA 30/36	MVA 42/48	MVA 60
L	.875	.875	.875	1.125
M	1.9	1.9	1.9	1.9
N	F	3.0	3.0	3.0
O	9.8	10.4	10.3	11.5
P	15.5	17.3	18.6	18.5
Q	19.0	21.2	22.4	22.3
R	1.4	2.0	1.6	1.6
S	2.5	3.1	2.7	2.7
T	4.1	5.5	6.1	6.2
U	4.8	5.3	5.1	4.9
V	6.5	7.9	8.4	8.5

	HEIGHT	WIDTH	DEPTH	DISCHARGE DUCT			ELECTRICAL CONN.					RETURN DUCT			
MODEL	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**
MVA18/24	46.9	17.7	22.3	1.3	15.2	16.4	7.6	4.0	19.5	4.6	10.2	19.2	16.3	0.6	2.1
MVA30/36	51.9	20.2	25.3	1.6	17.2	19.1	7.6	4.0	22.5	4.9	11.5	23.3	18.2	2.8	1.2
MVA42/48	55.9	22.2	27.3	1.6	19.2	21.2	7.6	4.0	24.4	5.8	12.7	24.2	21	0.9	1.7
MVA60	57.9	24.2	31.3	1.6	21.2	25.2	7.6	4.0	28.3	5.8	15.6	28.8	21	2.0	1.2

PRODUCT INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE

MVA18-60 Elec Heat Ready
LH Return — Configuration L





COIL CONNECTION

	MVA 18/24	MVA 30/36	MVA 42/48	MVA 60
L	.875	.875	.875	1.125
F	1.9	1.9	1.9	1.9
N	3.0	3.0	3.0	3.0
O	9.8	10.4	10.3	11.5
P	15.5	17.3	18.6	18.5
Q	19.0	21.2	22.4	22.3
R	1.4	2.0	1.6	1.6
S	2.5	3.1	2.7	2.7
T	4.1	5.5	6.1	6.2
U	4.8	5.3	5.1	4.9
V	6.5	7.9	8.4	8.5

	HEIGHT	WIDTH	DEPTH	DISCHARGE DUCT			ELECTRICAL CONN.					RETURN DUCT			
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
MVA18/24	46.9	17.7	22.3	1.3	15.2	16.4	7.6	4.0	19.5	4.6	10.2	19.2	16.3	0.6	1.3
MVA30/36	51.9	20.2	25.3	1.6	17.2	19.1	7.6	4.0	22.5	4.9	11.5	23.3	18.2	2.8	0.4
MVA42/48	55.9	22.2	27.3	1.6	19.2	21.2	7.6	4.0	24.4	5.8	12.7	24.2	21	0.9	0.9
MVA60	57.9	24.2	31.3	1.6	21.2	25.2	7.6	4.0	28.3	5.8	15.6	28.8	21	2.0	0.4

PRODUCT INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE

THIS PAGE INTENTIONALLY LEFT BLANK

MVA Series Air Handling Unit

Start-up Report

Job Name		City	
Sales Order #		Unit Tag	
Model Number		Serial Number	
Installer		Quantity of Units	

STARTUP REPORT			
Group	**Checklist Item**	**Yes**	**No**
Electrical/ Operational	Does electrical service correspond to unit nameplate?		
	-Nameplate Supply Voltage/Phase: Rated_________ Measured___________		
	-Nameplate Rated FLA motor current: Rated_______ Measured__________		
	Does all field wiring conform to unit wiring diagram?		
	Is field-provided freeze protection present? (if required)		
	Is fan wheel turning the correct direction?		
	Is the filter clean?		
Structural	Is unit properly supported?		
	Is unit installed level (necessary for proper condensate drainage)?		
	Is properly sized condensate trap present?		
	Is the condensate disposal system operating correctly?		
	Is auxiliary external condensate drain pan installed or auxiliary drain connection utilized as recommended by IOM? (not required for valid warranty)		
Piping Check	**CRITICAL!** For Horizontal Unit Orientation: Is the EEV in vertical orientation?		
	Is the DX system charged per the condensing unit instructions?		
	Is unit piping correct and insulated to prevent condensation?		
	Are the refrigerant pipe lines properly insulated?		
	Are there any leaks detected: interior to unit or at connections?		

MVA Series Air Handling Unit
Installation, Operation and Maintenance Manual